APPENDIX
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APPENDIX A

IN THE UNITED STATES COURT OF APPEALS FOR THE SECOND CIRCUIT

No. 01-6008

UNITED STATES

v.

ALCAN ALUMINUM CORP.

April 21, 2003

A petition for rehearing and a petition for rehearing en banc having been filed herein by the appellant Alcan Aluminum Corporation,

Upon consideration by the panel that decided the appeal, it is ordered that said petition for rehearing is **DENIED**.

It is further noted that the petition for rehearing en banc has been transmitted to the judges for the court in regular active service and to any other judge that heard the appeal and that no such judge has requested a vote be taken thereon.

FOR THE COURT
ROSEANN B. MACKECHNIE, Clerk

By:

/s/
Arthur M. Heller, Motions Staff Attorney

APPENDIX B

IN THE UNITED STATES COURT OF APPEALS FOR THE SECOND CIRCUIT

No. 01-6008

UNITED STATES OF AMERICA; STATE OF NEW YORK,

Plaintiffs-Appellees,

v.

ALCAN ALUMINUM CORPORATION,

Defendant-Appellant.

January 7, 2003

Before **CARDAMONE, STRAUB,** and **KATZMANN,** Circuit Judges.

CARDAMONE, Circuit Judge:

Defendant Alcan Aluminum Corporation (Alcan, company or appellant) appeals from a judgment of the United States District Court for the Northern District of New York (McAvoy, J.) entered on November 14, 2000, finding the company jointly and severally liable to plaintiffs United States of America and the State of New York (collectively, the government), for response costs incurred at two hazardous waste sites. It might be said that in writing this opinion we cover ground we have already worked. On a prior occasion we thought that we had thoroughly plowed the field of CERCLA liability, which is the

subject of this appeal. But, on reading the briefs of the parties and those filed by amici supporting appellant's arguments urging reversal, we think it is obviously necessary to plow the same field again.

Background

This appeal is the latest round of litigation to result from the efforts of the United States and the State of New York to recover response costs incurred in remedying environmental contamination at two hazardous waste disposal sites in Oswego County, in central New York. This case has had a long litigation history, detailed in numerous judicial opinions.[1] Because we assume the readers' familiarity with the facts and procedural history set out in those opinions, our recounting of what has been earlier explained will be brief.

This litigation began in 1987 when the government filed suit against 83 business entities to recover response costs under § 107 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9607 (as amended), in connection with the cleanup of an inactive hazardous waste site formerly owned by Pollution Abatement Services of Oswego, Inc. From 1970 to 1977, Pollution Abatement Services operated a waste disposal and treatment facility on 15 acres of land in Oswego County, New York. Chemical wastes from a variety of sources were stored,

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[1] *See, e.g., United States v. Alcan Aluminum Corp.*, 755 F. Supp. 531 (N.D.N.Y. 1991), *aff'd in part, rev'd in part and remanded,* 990 F.2d 711 (2d Cir. 1993); *United States v. Alcan Aluminum Corp.*, Nos. 87-CV-920, 91-CV-1132, 1996 WL 637559 (N.D.N.Y. Oct. 28, 1996); *United States v. Alcan Aluminum Corp.*, Nos. 87-CV-920, 91-CV-1132, 1997 WL 727506 (N.D.N.Y. Aug. 20, 1997); *United States v. Alcan Aluminum Corp.*, 49 F. Supp. 2d 96 (N.D.N.Y. 1999); *United States v. Alcan Aluminum Corp.*, 97 F. Supp. 2d 248 (N.D.N.Y. 2000). Similar issues have been addressed in litigation in the Third Circuit involving identical Alcan waste disposed of at a different site. *See, e.g., United States v. Alcan Aluminum Corp.*, 964 F.2d 252 (3rd Cir. 1992), *on remand, United States v. Alcan Aluminum Corp.*, 892 F. Supp. 648 (M.D. Pa. 1995), *aff'd,* 96 F.3d 1434 (3d Cir. 1996).

processed, and disposed of there. Unfortunately, owing to liquid waste spills, waste lagoon overflows, and structural deterioration, the site became contaminated. Heavy metals and polychlorinated biphenyls (PCBs) are two of the several contaminants detected there. In 1976 the government began response and cleanup activities at the Pollution Abatement Services site (PAS).

Alcan, a manufacturer of aluminum sheet and plate products in Oswego, New York, used PAS during the 1970s and arranged for disposal or treatment of 4.6 million gallons of its waste emulsion at the PAS site. Although this emulsion, which resulted from Alcan's manufacturing processes, consisted mainly of water and oil, it also contained aluminum, cadmium, chromium, copper, lead, and zinc, substances designated as "hazardous" under CERCLA.

Of the 83 entities charged as potentially responsible parties in the government's 1987 lawsuit, only defendant Alcan declined to become a party to the consent decree proposed by the government. On January 15, 1991 the district court granted summary judgment in favor of the government against Alcan, finding Alcan jointly and severally liable for the balance of the government's response costs that had not been reimbursed to it by the other 82 parties to the consent decree. *See United States v. Alcan Aluminum Corp.*, 755 F. Supp. 531 (N.D.N.Y. 1991) (*Alcan-PAS*). On appeal before this Court in 1993, we affirmed the grant of summary judgment with respect to Alcan's liability, but reversed the finding on the joint and several scope of Alcan's liability and remanded to the district court for further proceedings relating to the potential divisibility of harm and the apportionment of damages. *United States v. Alcan Aluminum Corp.*, 990 F.2d 711 (2d Cir. 1993) (*Alcan*).

At the time we decided *Alcan* another case, *United States v. Alcan Aluminum Corp.*, 91-CV-1132 (*Alcan-Fulton*), was pending before the district court. At issue were cleanup costs incurred by the government at a Superfund site in Fulton, New

York. The Fulton Terminal operated from 1972 to 1977 as a staging and storage area for hazardous waste scheduled for incineration at PAS. Approximately 70,000 gallons of Alcan's waste emulsion were shipped directly to the Fulton site from Alcan's Oswego manufacturing plant during 1972 and 1973. On December 1, 1993 the district court consolidated *Alcan-PAS* and *Alcan-Fulton*.

Following consolidation of the PAS and Fulton cases, the district court granted the government's summary judgment motion only on the issue of Alcan's liability to the government for its response costs at Fulton. *See United States v. Alcan Aluminum Corp.*, 1996 WL 637559 (N.D.N.Y. Oct. 28, 1996). The trial court refused to rule on the divisibility of harm and the apportionment of damages with respect to either site at the summary judgment stage. To decide these issues it held a five-day bench trial beginning on October 4, 1999. With the assistance of a court-appointed expert the district court found Alcan jointly and severally liable for response costs at both PAS and Fulton. *See United States v. Alcan Aluminum Corp.*, 97 F. Supp. 2d 248 (N.D.N.Y. 2000) (*Alcan-Consolidated*). On the basis of post-trial submissions the district court entered a final judgment in favor of the United States in the amount of $12,201,929.30 and in favor of the State of New York in the amount of $1,422,155.39. Alcan appeals from this judgment. We affirm.

Discussion

On appeal Alcan challenges essentially every aspect of the district court's many rulings. After carefully reviewing Alcan's arguments we are not persuaded that any of them warrant reversal of the judgment. In the following discussion we address the two we consider the most important issues raised on appeal, namely, the divisibility of the harm at PAS and Fulton and the constitutionality of retroactive CERCLA liability. We think it unnecessary to address the remainder of Alcan's arguments either because they have been sufficiently addressed

in the district court's decisions or because we find them to be wholly without merit.[2]

I. Divisibility of Harm

A. Statutory Threshold for Liability

CERCLA § 9607 is a strict liability statute. It imposes liability on "any person who by contract, agreement, or otherwise arranged for disposal or treatment" of hazardous substances "from which there is a release, or a threatened release which causes the incurrence of response costs." § 9607(a)(3) and (4). As we have explained previously, the plain meaning of this provision permits the government to recover response costs from a defendant like Alcan if the government proves "(1) there was a release or threatened release, which (2) caused incurrence of response costs, and (3) * * * the defendant generated hazardous waste at the clean-up site." *Alcan*, 990 F.2d at 721. The government is not required to show that a specific defendant's waste caused the incurrence of cleanup costs in order for strict liability to attach to that defendant. *Id.*

At this juncture in the instant litigation it has been established that Alcan is liable to the government under the clear language of CERCLA § 9607 for response costs incurred at both PAS and Fulton. Alcan and the government have stipulated that there was a release of contaminants at PAS, that the government incurred costs in response to this release, and that Alcan generated a waste emulsion that was disposed of at the site. The parties have also stipulated that Alcan's waste

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[2] Those arguments are: (1) that expert testimony was improperly admitted; (2) that *res judicata* barred the government from introducing on remand evidence that Alcan's emulsion contained additional hazardous substances; (3) that the district court applied an incorrect standard in deciding the motion for reconsideration; and (4) that the district court erred in not considering its contention that the government's response measures were inconsistent with the National Contingency Plan.

emulsion contained cadmium, chromium, copper, lead, and zinc. Alcan does not dispute that these elements and their respective compounds are identified as "hazardous substances" under CERCLA. The district court — ruling on summary judgment motions of the United States and the State of New York more than a decade ago — found Alcan liable for response costs at PAS. *Alcan-PAS,* 755 F. Supp. 531. We affirmed this ruling when the case came before us the first time. *Alcan,* 990 F.2d at 719-21.

With respect to Fulton, Alcan and the government have similarly stipulated that a release occurred there, that this release resulted in the incurrence of government response costs, and that Alcan generated waste that was delivered to the site. Because the Alcan waste emulsion shipped to Fulton was identical to the waste emulsion shipped to PAS — and thus contained the hazardous substances cadmium, chromium, copper, lead, and zinc — Alcan is also liable pursuant to CERCLA § 9607 for the government's response costs incurred at Fulton.

B. Divisibility Standard

A determination holding Alcan liable under CERCLA § 9607 for response costs incurred by the government at PAS and Fulton does not resolve the issue of liability completely. As we explained previously, courts have added a "common law gloss" to the statutory framework of CERCLA. *Alcan,* 990 F.2d at 721. More specifically, we noted that courts "have at once adopted a scheme of joint and several liability but at the same time have limited somewhat the availability of such liability against multiple defendants charged with adding hazardous substances to a Superfund site." *Id.* at 721-22 (citing *O'Neil v. Picillo,* 883 F.2d 176, 178-79 (1st Cir. 1989) (under some circumstances it is impossible to determine which party caused harm); *United States v. Chem-Dyne Corp.,* 572 F. Supp. 802, 808 (S.D. Ohio 1983) (courts decide liability under common-law principles on a case by case basis)).

The *Restatement (Second) of Torts* § 433A (1965), is frequently cited by those courts endeavoring to determine whether a party that has contributed hazardous substances to a multi-party waste site should be held jointly and severally liable for the remediation costs incurred there. *See, e.g., United States v. Alcan Aluminum Corp.*, 964 F.2d 252, 268-69 (3rd Cir. 1992) (*Alcan-Butler*); *O'Neil*, 883 F.2d at 178; *United States v. Monsanto*, 858 F.2d 160, 171-73 (4th Cir. 1988). Indeed, we referred to the Restatement in our previous decision regarding this case. *Alcan*, 990 F.2d at 722. According to the Restatement, where "two or more causes have combined to bring about harm," damages from the harm are to be apportioned among the causes if "there are distinct harms" or "there is a reasonable basis for determining the contribution of each cause to a single harm." § 433A(1) & cmt. 2.

Based upon the common law principles of divisibility and apportionment embodied in the Restatement, we identified in our previous decision precisely how the issue of Alcan's liability was to be resolved. We stated that Alcan may escape joint and several liability "if it either succeeds in proving that its oil emulsion, when mixed with other hazardous wastes, did not contribute to the release and clean-up costs that followed, or contributed at most to only a divisible portion of the harm." *Alcan*, 990 F.2d at 722 (citing *Alcan-Butler*, 964 F.2d at 270).

Our previous decision presented two additional qualifications material to the district court's liability determination. First, although we declared that it would be possible for Alcan to avoid liability entirely, we specified that such would be a "special exception" that would permit Alcan to escape payment only if the company could prove that "its pollutants did not contribute more than background contamination and also cannot concentrate." *Id.* Second, in the event that Alcan did not qualify for the special exception, we ruled that the company could nonetheless "present evidence relevant to establishing divisibility of harm." *Id.* We identified several types of proof

that would be relevant to such a showing of divisibility, including "relative toxicity, migratory potential, and synergistic capacities of the hazardous substances at the site." *Id.* (citing *Alcan-Butler,* 964 F.2d at 270 n. 29, 271; *Monsanto,* 858 F.2d at 172 n. 26).

Further, our previous *Alcan* opinion made it clear that Alcan bears the ultimate burden of establishing a reasonable basis for apportioning liability and that the government has no burden of proof with respect to what caused the release of hazardous waste and triggered response costs. 990 F.2d at 722. We also emphasized that apportionment is "an intensely factual determination." *Id.* And, as the Third Circuit observed, the burden to show divisibility is "substantial." *Alcan-Butler,* 964 F.2d at 269.

C. *Alcan* Standard Applied

Alcan's divisibility burden has grown heavier as this litigation has progressed. In this case's earliest stages Alcan's liability was premised on the presence of metals in the company's waste emulsion, specifically cadmium, chromium, copper, lead and zinc. *See Alcan-PAS,* 755 F. Supp. at 540. In subsequent proceedings the government adduced evidence that Alcan's waste emulsion was also contaminated with nickel and PCBs. *See Alcan-Consolidated,* 97 F. Supp. 2d at 261-66.

Although Alcan strongly disputes the district court's findings of fact with respect to the presence of nickel and PCBs in its waste emulsion, we review the district court's findings of fact for clear error and a finding of fact is only "clearly erroneous" when "the reviewing court on the entire evidence is left with the definite and firm conviction that a mistake has been committed." *United States v. United States Gypsum Co.,* 333 U.S. 364, 395 (1948). Having thoroughly reviewed the record, we find that whatever Alcan's assertions of factfinding error amount to they are not sufficiently persuasive for us to conclude that the district court's findings are mistaken. On the contrary,

the record contains ample evidence to support the trial court's finding that Alcan's waste emulsion contained nickel and PCBs. Our review of the trial court's divisibility analysis, *infra*, is predicated on these facts.

The finding that Alcan's waste emulsion contained PCBs is particularly significant because — as the district court properly ruled — it disqualifies Alcan from escaping all CERCLA liability. *See Alcan-Consolidated*, 97 F. Supp. 2d at 268-69. The "special exception" that we created when this case was previously before us was intended to excuse a responsible party from all CERCLA liability only in instances where (1) a party contributed hazardous substances to a site in quantities that did not exceed background levels and (2) the hazardous substances were incapable of concentrating. *See Alcan*, 990 F.2d at 722. We created this exception based on an awareness that some CERCLA hazardous substances, like metals, occur in the environment naturally. The narrow exception carved out was aimed to shield from liability those entities that have contributed "hazardous" substances — defined as such in the law — to a site but whose contribution — in the absence of EPA thresholds — did not exceed natural background levels, and did not themselves trigger the incurrence of response costs. Because Alcan's emulsion was contaminated with PCBs, which are man-made substances without natural background levels, Alcan cannot escape liability under the special exception this court articulated.

Even though the company is not permitted to escape liability altogether, we have also recognized that Alcan can nonetheless limit its liability by demonstrating that the harm incurred at PAS or Fulton was divisible. *Alcan*, 990 F.2d at 722. In order to avoid the imposition of joint and several liability under CERCLA, the company must (1) demonstrate that the harm caused by its emulsion was "distinct" from the harm caused by other contributors at PAS and Fulton or (2) proffer a reasonable basis for determining the proportional contribution of its

emulsion to what may be conceived of as a single harm at each site. *Restatement (Second) of Torts* § 433A. We had previously stated that proof of "relative toxicity, migratory potential, degree of migration, and synergistic capacit[y]" of the hazardous substances at the site is relevant to establishing the divisibility of harm. *Alcan,* 990 F.2d at 722.

We agree with the district court that Alcan failed to demonstrate that the harm done at PAS and Fulton was divisible. Alcan does not claim that the harm caused by its emulsion was somehow distinct from the harm caused by other hazardous substances at the sites, nor does the company make any real effort to identify the extent to which its waste contributed to a single harm. Rather, both at trial and again on appeal, Alcan simply contends that its waste emulsion was benign and "really * * * just like homogenized milk." It argues therefore that its contribution to the harm and appropriate portion of the damages is readily identifiable; and that its portion is zero. Appellant also presents this argument in an alternative form, analyzing the properties of the constituents of its waste emulsion separately and contending that such analysis similarly supports a conclusion that its emulsion did not contribute to the harm at PAS or Fulton.

In our view appellant's argument on the divisibility of the harm at PAS and Fulton is untenable in two critical respects. First, in light of the district court's conclusion that the waste emulsion contained PCBs, it is unreasonable for Alcan to continue to insist that its waste emulsion was harmless. Second, appellant's analysis — focusing individually on each constituent of its waste — does not provide an acceptable basis for establishing divisibility. CERCLA cases typically involve numerous hazardous substance generators and the disposal of a variety of wastes at a single site. Because the various wastes frequently commingle and interact, "the fact that a single generator's waste would not in itself justify a response is irrelevant * * * as this would permit a generator to escape

liability where the amount of harm it engendered to the environment was minimal, though it was significant when added to other generators' waste." *Alcan-Butler,* 964 F.2d at 264.

The same logic that prevents a polluter from considering the effects of its waste in isolation from the other contaminants at a site also prevents the company from analyzing the constituents of its waste individually without regard to the effects of the "emulsion as a whole." *See Alcan-Consolidated,* 97 F. Supp. 2d at 269; *United States v. Alcan Aluminum Corp.,* 892 F. Supp. 648, 651 (M.D. Pa. 1995). Because Alcan, which carried the burden of proof, did not comprehensively and persuasively address the effects of its waste emulsion at PAS and Fulton, it cannot be said that the company either established that the harm caused by its emulsion was distinct or proffered a reasonable basis for dividing the harm and apportioning liability. Stated another way, appellant did not satisfy its substantial burden with respect to divisibility because it failed to address the totality of the impact of its waste at each of the sites; it ignored the likelihood that the cumulative impact of its waste emulsion exceeded the impact of the emulsion's constituents considered individually, and neglected to account for the emulsion's chemical and physical interaction with other hazardous substances already at the site.

Our conclusion that Alcan is jointly and severally liable for the harm caused at PAS and Fulton is based upon the district court's finding that

> [t]he evidence suggested that Alcan's emulsion was a more aggressive solvent than either water * * * or oil * * * because, in an emulsion phase, oil and water have a greater capacity to absorb contaminants than either water or oil alone. Alcan's emulsion, therefore, absorbed the contaminants at the sites and facilitated their transport throughout. In so doing, Alcan's emulsion contributed to the breadth of contamination at

> both PAS and Fulton. In other words, even if the hazardous substances in Alcan's emulsion themselves did not contribute to the response costs at the sites (which the PCBs and nickel did), the emulsion as a whole contributed to both the release and response costs.

Alcan-Consolidated, 97 F. Supp. 2d at 270. Our holding finds further support by decisions in the Third Circuit that similarly found Alcan jointly and severally liable for cleanup costs incurred at a site where waste emulsion from the company's Oswego, New York facility was discharged. *See United States v. Alcan Aluminum Corp.*, 892 F. Supp. 648, 651 (M.D. Pa. 1995), *aff'd*, 96 F.3d 1434 (3d Cir. 1996). Having made a determination regarding joint and several liability, we turn to the second issue.

II. Constitutionality of CERCLA

Before this case went to trial on the issue of divisibility, Alcan moved to dismiss the government's complaint pursuant to Fed. R. Civ. P. 12(b)(6) asserting that, in light of the Supreme Court's decision in *Eastern Enterprises v. Apfel*, 524 U.S. 498 (1998), the retroactive application of CERCLA to Alcan's waste disposal activities constitutes an unconstitutional taking under the Takings Clause of the Fifth Amendment and a violation of the Due Process Clause of the Fourteenth Amendment. The district court denied appellant's motion to dismiss. *See United States v. Alcan Aluminum Corp.*, 49 F. Supp. 2d 96 (N.D.N.Y. 1999).

In *Eastern Enterprises* a deeply divided Supreme Court struck down retroactive application of the Coal Industry Retiree Health Benefit Act of 1992 (Coal Act), 26 U.S.C. §§ 9701-22. 524 U.S. at 537-38 (plurality op.), 547-50 (Kennedy, J., concurring in judgment). At issue was a Coal Act allocation formula that assigned the provision of employee retirement benefits, including guaranteed health care benefits established

by a series of collective bargaining agreements in the 1970s, to employers that had left the industry before those agreements became operative. Eastern Enterprises challenged the Coal Act on both takings and due process grounds and a plurality of four justices held that the Act, as applied to Eastern, violated the Takings Clause of the Fifth Amendment. *Id.* at 537-38. A concurring opinion by Justice Kennedy — that joined the plurality's judgment, but which rejected its takings analysis in favor of a substantive due process approach — supplied the fifth vote necessary to deem the applicable section of the Coal Act unconstitutional under the circumstances of that case. *Id.* at 539-50 (Kennedy, J., concurring in the judgment and dissenting in part).

Alcan's invocation of the *Eastern Enterprises* decision puts a new spin on an old argument: many potentially responsible parties have challenged the constitutionality of retroactive CERCLA liability. A review of the case law reveals that, historically, this has not been a winning argument. Prior to the decision in *Eastern Enterprises,* a number of courts held that CERCLA applies retroactively, and that such construction did not violate the Constitution. *See, e.g., United States v. Olin Corp.,* 107 F.3d 1506, 1511-15 (11th Cir. 1997); *O'Neil,* 883 F.2d at 183 n. 12; *Monsanto,* 858 F.2d at 173; *United States v. Northeastern Pharm. and Chem. Co.,* 810 F.2d 726 (8th Cir. 1986); *Raytheon Co. v. McGraw-Edison Co.,* 979 F. Supp. 858, 863-64 (E.D. Wis. 1997); *Cont'l Title Co. v. Peoples Gas Light & Coke Co.,* 959 F. Supp. 893, 893-901 (N.D. Ill. 1997); *Ninth Ave. Remedial Group v. Fiberbond Corp.,* 946 F. Supp. 651, 651-64 (N.D. Ind. 1996); *Nova Chems., Inc. v. GAF Corp.,* 945 F. Supp. 1098, 1100-05 (E.D. Tenn. 1996); *United States v. Kramer,* 757 F. Supp. 397, 428-31 (D.N.J. 1991); *Kelley v. Thomas Solvent Co.,* 714 F. Supp. 1439, 1442-45 (W.D. Mich. 1989).

Given the extensive case law addressing and upholding the constitutionality of retroactive CERCLA liability, the question

is whether *Eastern Enterprises* has changed the constitutional terrain and effectively overruled prevailing authority. The district court thought not, *see United States v. Alcan Aluminum Corp.*, 49 F. Supp. 2d 96, 99-101, and we do not think so either.

Although a majority in *Eastern Enterprises* was willing to declare the retroactive liability scheme of the Coal Act unconstitutional, no single rationale commanded a majority. Only four justices voted to strike down the statute as unconstitutional based upon a takings clause analysis. *See E. Enter.*, 524 U.S. at 537. The fifth vote required to reach that result came in a concurrence that specifically rejected the plurality's takings analysis, but found the statute unconstitutional based on a violation of substantive due process. *Id.* at 539, 550. "When a fragmented Court decides a case and no single rationale explaining the result enjoys the assent of five Justices, 'the holding of the Court may be viewed as that position taken by those Members who concurred in the judgments on the narrowest grounds.'" *Marks v. United States*, 430 U.S. 188, 193 (1977) (quoting *Gregg v. Georgia*, 428 U.S. 153, 169 n. 15 (1976)). This rule only works in instances where "one opinion can meaningfully be regarded as 'narrower' than another — only when one opinion is a logical subset of other, broader opinions," *King v. Palmer*, 950 F.2d 771, 781 (D.C. Cir. 1991) (en banc), that is to say, only when that narrow opinion is the common denominator representing the position approved by at least five justices. When it is not possible to discover a single standard that legitimately constitutes the narrowest ground for a decision on that issue, there is then no law of the land because no one standard commands the support of a majority of the Supreme Court. *See Rappa v. New Castle County*, 18 F.3d 1043, 1058 (3rd Cir. 1994).

With respect to the Supreme Court's analysis in *Eastern Enterprises*, it is difficult to discern a general principle of law that supports appellant's claim that retroactive CERCLA liability is unconstitutional. Because the substantive due

process reasoning presented in Justice Kennedy's concurrence is not a logical subset of the plurality's takings analysis, no "common denominator" can be said to exist among the Court's opinions. The only binding aspect of such a splintered decision is its specific result, and so the authority of *Eastern Enterprises* is confined to its holding that the Coal Act is unconstitutional as applied to Eastern Enterprises.

Significantly, two appellate courts have failed to hold the Coal Act unconstitutional as it applies to other coal mining corporations. *See Anker Energy Corp. v. Consolidation Coal Co.*, 177 F.3d 161, 168 (3d Cir. 1999); *Ass'n of Bituminous Contractors, Inc. v. Apfel*, 156 F.3d 1246, 1247 (D.C.Cir. 1998). If the holding of *Eastern Enterprises* is so specific that it does not support a finding that the Coal Act's retroactive liability provision is unconstitutional as applied to coal operators not in the same position as Eastern Enterprises, then it may not be said to stand for the much broader proposition that the application of retroactive CERCLA liability to Alcan runs afoul of the Constitution.

As noted, courts considering the issue prior to the *Eastern Enterprises* decision consistently agreed that the retroactive liability scheme of CERCLA is constitutional. Like this Court, several other courts have been asked to reconsider this precedent in light of *Eastern Enterprises*. Those courts have uniformly held that CERCLA continues to pass constitutional muster. *See United States v. Dico, Inc.*, 266 F.3d 864, 879-80 (8th Cir. 2001); *Franklin County Convention Facilities Auth. v. Am. Premier Underwriters, Inc.*, 240 F.3d 534, 550-53 (6th Cir. 2001); *United States v. Manzo*, 182 F. Supp. 2d 385, 407-08 (D.N.J. 2000); *Combined Prop./Greenbriar Ltd. P'ship v. Morrow*, 58 F. Supp. 2d 675, 677-82 (E.D. Va. 1999); *United States v. Vertac Chem. Corp.*, 33 F. Supp. 2d 769, 784-85 (E.D. Ark. 1998), *rev'd on other grounds sub nom. United States v. Hercules, Inc.*, 247 F.3d 706 (8th Cir. 2001).

We are in accord with this consistent authority that both pre- and post-dates *Eastern Enterprises*. As a consequence, holding Alcan jointly and severally liable under CERCLA for the cleanup costs incurred at PAS and Fulton does not result in an unconstitutional taking adverse to Alcan, or a deprivation of its right to due process.

Conclusion

For the reasons stated, the judgment of the district court is affirmed.

APPENDIX C

IN THE UNITED STATES DISTRICT COURT FOR THE NORTHERN DISTRICT OF NEW YORK

Nos. 87-CV-920, 91-CV-1132

UNITED STATES OF AMERICA, and **THE STATE OF NEW YORK**,

Plaintiffs,

v.

ALCAN ALUMINUM CORPORATION, *et al.*,

Defendants.

May 1, 2000

MEMORANDUM — DECISION & ORDER

McAVOY, District Judge:

I. Procedural History

On June 10, 1987, the United States of America and the State of New York (collectively "the government") initiated an action against 83 business entities to recover response costs pursuant to Section 107 of the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA") as amended, 42 U.S.C. § 9601, *et seq.*, in connection with the clean-up costs of a hazardous waste site formerly owned by Pollution Abatement Services of Oswego, Inc. ("PAS"). Shortly after commencement of that action, the government entered into a

consent decree with 82 of the defendants, recovering approximately $9.1 million of the approximately $12.3 million in response costs incurred through April 1, 1987. The present litigation proceeded against Alcan Aluminum Corporation ("Alcan"), the only non-settling defendant.

In February 1988, Alcan commenced a third-party action against Cornell University ("Cornell"). That action sought a declaration that Cornell was jointly and severally liable for the response costs incurred by the government relative to PAS and an order directing Cornell to contribute its fair share of the costs.

In January of 1991, this Court granted summary judgment in favor of the government, holding Alcan jointly and severally liable for approximately $4 million in response costs at PAS. *See United States v. Alcan,* 755 F. Supp. 531 (N.D.N.Y. 1991) ("Alcan-PAS"). The Court also granted Alcan's motion against third-party defendant, Cornell, and found that a hearing was necessary to determine Cornell's fair share of response costs. *See id.*

On November 19 and 20, 1991, the Court held a hearing to determine Cornell's fair share of the response costs incurred by the government at PAS. The Court adopted the six-factor fair share allocation test set forth in *United States v. R.W. Meyer, Inc.,* 932 F.2d 568 (6th Cir. 1991), and found Cornell liable for six percent of the response costs recovered from Alcan and, thus, the Court awarded Alcan $310,540.92.

On appeal, the Second Circuit affirmed the grant of summary judgment with respect to the imposition of liability against Alcan for response costs at PAS and the finding that Alcan was entitled to contribution from Cornell. *See United States v. Alcan,* 990 F.2d 711 (2d Cir. 1993). However, the Second Circuit reversed the Court's finding that the government was entitled to summary judgment on the issue of damages. *See id.* In "essentially" adopting the reasoning of the Third Circuit in

United States v. Alcan Aluminum Corp., 964 F.2d 252, 267-271 (3d Cir. 1992) ("*Alcan-Butler*"), the court found that the common law scheme of joint and several liability applies to CERCLA. Under this rubric,

> where two or more tortfeasors act independently and cause a distinct or single harm, for which there is a reasonable basis for division according to the contribution of each, then each is liable for damages only for its own portion of harm. In other words, the damages are apportioned. But where each tortfeasor causes a single indivisible harm, then damages are not apportioned and each is liable in damages for the entire harm.

990 F.2d at 722 (citing Restatement (Second) of Torts § 433(A) (1965)). The Second Circuit "candidly admitted" that its holding brought causation into CERCLA, a strict liability statute, through the back door, but limited the "special exception to the usual absence of causation" to situations where a defendant's "pollutants did not contribute more than background contamination and also cannot concentrate." *Id.* Thus, the court held:

> Alcan may escape liability if it either succeeds in proving that its oil emulsion, when mixed with other hazardous wastes, did not contribute to the release and the clean-up costs that followed, or contributed at most to only a divisible portion of harm.

Id. (citing *Alcan-Butler*, 964 F.2d at 270). The court further instructed that Alcan "may present evidence relevant to establishing divisibility of harm, such as, proof disclosing the relative toxicity, migratory potential, degree of migration, and synergistic capacities of the hazardous substances at the site" to show that the harm at PAS was divisible. *Id.* (citing *Alcan-Butler*, 964 F.2d at 270 n. 29, 271; *United States v. Monsanto, Co.*, 858 F.2d 160, 172 n. 26 (4th Cir. 1988), *cert. denied*, 490

U.S. 1106 (1989)). Finally, the court held that if Alcan can show divisibility of harm they must also provide a "reasonable basis for apportionment of liability." *Id.*

At that time, the case *United States v. Alcan Aluminum,* 91-CV-1132 ("Alcan-Fulton"), involving clean-up costs at a superfund site in Fulton, New York was also pending before the Court. On December 1, 1993, the Court consolidated Alcan-Fulton with the PAS case.

In May of 1996, the government moved for summary judgment against Alcan on two issues: (1) liability in the Alcan-Fulton case and (2) divisibility of harm and apportionment of costs in Alcan-PAS. Alcan opposed this motion, cross-moved for summary judgment on the same issues, and moved to dismiss for lack of subject matter jurisdiction, claiming that CERCLA (1) cannot be applied retroactively and (2) is violative of the Commerce Clause. On October 28, 1996, the Court granted the government's motion for summary judgment with respect to liability at the Alcan-Fulton site,[1] denied Alcan's motion to dismiss for lack of subject matter jurisdiction, and reserved decision pending rebriefing on the issues of divisibility and apportionment of harm. *See United States v. Alcan Aluminum Corp.,* 1996 WL 637559 (N.D.N.Y. Oct. 28, 1996).

After considering the supplemental briefing submitted by both parties, the Court denied the government's motion for

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[1] To establish liability under CERCLA the government must establish that: (1) a defendant is in one of the four categories of covered persons listed in 42 U.S.C. § 9697(a) as liable for costs of remedial action; (2) the site of the cleanup is a facility within 42 U.S.C. § 9601(9)'s definition; (3) there is a release or threatened release of hazardous substances at the facility; (4) as a result of which plaintiff has incurred response costs; and (5) the costs incurred conform to the National Contingency Plan under 42 U.S.C. § 9607(a)(4)(a) as administered by the Environmental Protection Agency. *See Alcan,* 990 F.2d at 719-20 (citing *B.F. Goodrich Co. v. Murtha,* 958 F.2d 1192 (2d Cir. 1992)). Alcan did not contest these elements and, thus, the Court granted the government's motion for summary judgment on this issue. *See Alcan,* 1996 WL 637559, at *7.

summary judgment; finding that genuine issues of fact existed with respect to the constituents of Alcan's emulsion;[2] whether the emulsion contributed to the response costs and clean-up; and whether the metals in Alcan's emulsion could have concentrated and, thus, posed an environmental threat. *See United States v. Alcan,* 1997 WL 727506, at *4 (N.D.N.Y. Aug. 20, 1997).

On October 29, 1998, Alcan moved to dismiss the Complaint pursuant to Fed. R. Civ. P. 12(b)(6), asserting that the retroactive application of CERCLA is unconstitutional in light of the Supreme Court's decision in *Eastern Enter. v. Kenneth S. Apfel,* 524 U.S. 498 (1998). The Court denied this motion in a Memorandum-Decision & Order dated May 11, 1999. *See United States v. Alcan Aluminum Corp.,* 49 F. Supp. 2d 96 (1999).

Cornell was released from this case by a stipulation signed September 29, 1999.

The Court held a bench trial in this action during October 4-8, 1999 to determine whether Alcan could avoid or limit liability.[3] At trial, the government argued that Alcan could not avoid liability because: (1) Alcan could not prove that its emulsion, when mixed with hazardous substances, did not contribute to the release or clean-up costs or contributed to a divisible portion of the harm; (2) Alcan's emulsion contained polychlorinated biphenyls ("PCBs"), Volatile Organic

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[2] Alcan claimed that its emulsion contained only (1) cadmium; (2) chromium; (3) copper; (4) lead; and (5) zinc whereas the government claimed that the emulsion also contained (6) aluminum; (7) nickel; (8) polychlorinated biphenyls ("PCBs"); and (9) volatile organic compounds ("VOCs"). *See Alcan,* 1997 WL 727506, at * 4.

[3] With the parties consent, the Court appointed an expert pursuant to Fed. R. Evid. 706 to assist it in evaluating the scientific evidence. The Court's expert, Professor Charles Driscoll, Ph.D., is associated with the Department of Civil and Environmental Engineering at Syracuse University. The expert's report is part of the record in this case.

Compounds ("VOCs"), and above background levels of metals, which contributed to the release and clean-up costs; and (3) the metals in Alcan's emulsion were capable of concentrating. Alcan, on the other hand, argued that: (1) its emulsion did not contain PCBs, VOCs, or above background levels of metals; (2) the metals did not concentrate; (3) that the legal standard adopted by this Court is incorrect; and (4) it could establish divisibility of harm by looking at the relative toxicity of hazardous substances at the PAS and Fulton Sites and demonstrating that the emulsion contained only background metals that did not concentrate. Alcan did not address the effect of its emulsion as a whole on the response costs at PAS and Fulton; instead, it focused on the individual constituents of its emulsion.

II. Findings of Fact

A. Alcan's Plant and the Hot Rolling Process

Alcan operates a hot mill, including a hot rolling line which processes aluminum ingots[4] into sheets of aluminum. The process uses an oil and water emulsion to lubricate and cool the ingot and the steel rolls used to reduce the ingot's width. The emulsion picks up fragments of the ingots during the rolling process. Although the emulsion is filtered before disposal, the filtration process does not remove all of the metal fragments. As a result, Alcan's emulsion contains aluminum as well as the impurities in the ingot, cadmium, chromium, copper, lead, nickel, and zinc.

Before the ingot is placed on the hot rolling line, it is heated in "pusher furnaces" (also called homogenizing furnaces or soaking pits). In the 1970s, Alcan cleaned the ingot with 1,1,1, Trichloroethane ("TCA") before placing it in these furnaces.

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[4] The aluminum ingots are composed of recycled beverage containers and scrap aluminum that are melted down and cast into ingots. *See* Lagoe Testimony. The ingots are not pure aluminum; impurities include cadmium, chromium, copper, lead, nickel, and zinc.

After it is heated, the ingot is placed on the hot rolling line where it passes through an edging mill, two rolling mills, and various shears.

The first rolling mill, the 120 inch reversing mill (the "120 inch mill"), reduces the thickness of the ingot by approximately one half inch each time the ingot passes through. Alcan uses a two to three percent oil[5] and water emulsion as a lubricant and coolant in this mill (the "120 inch mill emulsion"). After the ends are sheared, the ingot travels to the 100 inch mill (also called the finishing mill or tandem mill) (the "100 inch mill"), which further reduces its thickness. An emulsion composed of about six percent oil in water is used to cool and lubricate the rolls in the 100 inch mill (the "100 inch mill emulsion").

The used emulsion is collected in sumps underneath each of the mills. The scum-like top layer of the emulsion is removed with a skimming system before the bulk of the emulsion is pumped into the system's "dirty compartment" for storage. The emulsion is then sent through a belt type skimmer, and next, to a recirculation system. *See* Government Ex. 36, at p. 1. Distilled water is added to the emulsion to keep the concentration of oil and water constant. The emulsion is recirculated for up to one year before it is deposited in a waste emulsion collection system in the hot mill area and pumped to a central storage facility for processing and disposal. The sumps underneath the rolling mill are not continuous. There are walls or other barriers separating the 100 inch mill emulsion from the 120 inch mill emulsion. When the emulsions are sent to waste, however, they are combined. *See* Lagoe Testimony, Tr. at 168. At the time of disposal, the waste emulsion was composed of approximately eighty percent emulsion from the 100 inch mill,

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[5] At the time Alcan disposed waste at PAS and Fulton, they used Farbest oil in the emulsion. The Farbest oil contained oil and unknown proprietary additives.

ten percent emulsion from the 120 inch mill, and ten percent hydraulic, lubricating, and bearing oils. *See id.* at 149.

The floor and wall areas underneath the roll table and shear pits are cleaned only once per year; thus, the areas are not subject to a constant flushing of coolant during production. *See* Government Ex. 24.

Until the mid-1980s, in addition to the hot rolling line, the hot mill area contained a plate mill (also called the flat sheet line and cut-to-length line). The plate mill converted the rolls of aluminum created by the hot mill into flat sheets of aluminum. Alcan used rags soaked with TCA to clean the rollers on this line. *See* Lagoe Testimony, Tr. at 52.

Other than the discontinuation of use of certain materials like TCA and fluid containing PCBs, there were no major changes on the hot rolling line from 1970 to 1989. In 1978, however, Alcan installed an ultra filtration unit. The ultra filtration unit processes the emulsion so that less material is sent out for disposal and more is recycled in house. *See* Lagoe Testimony, Tr. at 18. In the ultra filtration process, the emulsion is circulated through a membrane system, yielding two by-products: "the ultra filtration concentrate which is subsequently used as a fuel and a permeate which then flows to an on-site lagoon for further treatment." *See* Government Ex. 36, at p. 2. Sometime in 1978, the ultra filtration unit was connected to outfall 002, which discharged treated permeate into Lake Ontario. *See* Lagoe Testimony, Tr. at 187; Government Ex. 3.

B. PAS

From 1970 to 1977, Pollution Abatement Services operated PAS, a high temperature liquid chemical waste incineration facility on fifteen acres in the City of Oswego, New York. Lake Ontario lies almost directly North of PAS and the entire site area slopes toward Lake Ontario. The site lies between two creeks (Wine Creek and No Name Creek), which intersect. The creeks collect surface water and carry it to Lake Ontario. *See*

Appendix 1. A million gallon lagoon was located in the southern portion of the site, at the highest level of elevation. Leakage from the lagoon's North side and overflow flowed North toward Lake Ontario. The middle area of PAS contained thousands of drums of "various chemicals in various conditions." MacDonald Testimony, Tr. at 586. The lower portion of PAS contained a number of storage tanks and an incinerator. The incinerator stopped working at some point during PAS's operation and waste that was meant to be incinerated was combined and stored in on-site lagoons. *See* MacDonald Testimony, Tr. at 585.

Several liquid waste spills and lagoon overflows occurred while PAS operated the site. The combination of high rain fall and overflowing and leaking lagoons led to three oil spills in 1976. In April, the United States Coast Guard ("USCG") responded to PAS to investigate an oil spill. Commander MacDonald, the investigating officer, found that the site was significantly contaminated. "Some of [the] drums were holding liquids. Some of the drums had completely disintegrated, leaving a jelly type of consistency that was intact. The ground was covered. The ground was — there were pools of contamination on the grounds. There was oil on the grounds. This facility had become a dumping ground." MacDonald Testimony, Tr. at 586; *see also* Freestone Testimony, Tr. at 659; Yezzi Testimony, Tr. at 673; Government Exs. 86-54, 86-65 to 86-69, 86-84, 86-85. In response to the April 1976 spill, the USCG constructed a secondary lagoon (the "Coast Guard Lagoon") on the Northern portion of the site to contain spilled waste, instituted a recycling system that returned run off to the million gallon lagoon, and employed absorbent beams to collect oil from the surface of the adjacent creeks. *See* Government Exs. 85, 125.

In June of 1976, a second oil/chemical spill resulted from a combination of heavy rains, surface run-off, leaching from the lagoons, and spillage from the million gallon lagoon. The

EPA's testing confirmed a USCG report that the oil/chemical mixture included PCBs. *See* Government Ex. 85, at p. 2.

In December 1976, a third spill occurred after which the EPA took control of the site and built a tertiary lagoon (the "EPA lagoon") in a further attempt to contain run-off.

In March of 1977, the situation at PAS became critical, due in part to heavy rain and water flow from the spring thaw. All of the on-site lagoons were in danger of overflowing and/or bursting; the influx of water from the spring thaw was greater than PAS's discharge and/or diversionary capacity; and there was a high chance of continued precipitation. *See* Government Ex. 125. Testing conducted at the behest of the EPA indicated that the million gallon lagoon leaked and that the Coast Guard and EPA lagoons were potentially unstable.

The State of New York constructed a drainage ditch to divert uncontaminated surface run-off to Wine Creek. However, the pollutant saturated ground contaminated the ditch and further contaminated Wine Creek.

Reducing the level of the million gallon lagoon was a primary concern, *see* Government Ex. 015, because its leakage contributed to the hazardous run-off and oily spills. *See* Yezzi Testimony, Tr. at 672. (The million gallon lagoon overflowed and material continuously leaked through the lagoon's base and walls.); *see also* Government Ex. 62-004; 62-010; 62-011; 62-013; 62-030. The overflow and leakage from the lagoon flowed down through the barrel storage area prior to reaching the Coast Guard Lagoon. *See* MacDonald Testimony, Tr. at 610; Yezzi Testimony, Tr. at 688 ("Any material from the lagoon would come down what we, in this case, named the valley of the drums. You have the drums that were leaking and deteriorating and it would commingle with the waste coming down [from the million gallon] lagoon. We tried to put in some drainage ditches around to kind of control the — the spread of contamination [ ] along the surface of the site * * *.")

Portions of the ground at the site contained so much contamination that "walking on the site was [to some degree like walking] on a wet sponge, a very wet sponge. To the North side of the lagoon wall, the area there was very, very saturated with contaminated materials." Yezzi Testimony, Tr. at 678. Recovery wells dug to collect material flowing through the underground soil filled up rapidly with contaminated liquids. *See* Yezzi Testimony, Tr. at 690. Once the contaminants commingled, they could not be separated such that you could identify or treat an individual generator's waste. *See id.* at 691.

PAS abandoned the site in 1977, leaving approximately 12,000 drums of liquid waste and 100,000 gallons of bulk chemical waste on the site. Metals, VOCs, and PCBs were found in the lagoons and in drums removed from the site. Hazardous substances were released from the site into the soils, surface waters, stream sediments, and groundwater at and outside of the site. The results of testing at PAS indicated that contamination was significant and widespread but nonuniform across the site. The soils, surface water, and sediments at PAS were contaminated with VOCs[6] and metals[7] and the soil was contaminated with PCBs.[8] *See* Government Ex. 73. The

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[6] Surface water testing found concentrations of 0-150 parts per billion ("ppb") of 1,1 dichloroethane; 0-6.9 ppb of 1,1 dichloroethylene; 0-51 ppb of 1,1 trichloroethane, and 11-80 ppb of vinyl chloride. *See* Government Ex. 73, at Table 4-11. Results of sediment testing are listed in Table 4-12 of Government Exhibit 73. Soil sampling results can be found in Government Exhibit 77 Table 5-1.

[7] Metals found in soil samples included chromium (range 9.8-2.5 μ>>g/g); copper (range 8.4-64 μg/g); lead (range 2.9-9.1 μg/g); nickel (range 6.6-27 μg/g); and zinc (range 19-61 μg/g). *See* Government Ex. 73, at Table 4-10; *see also* Government Ex. 77, Table 5-5. Complete metal results for surface water are located in Table 4-11 of Government Exhibit 73. Results of sediment testing are listed in Table 4-12.

[8] PCB contamination in the soil ranged from 300-22,000 ppb. *See* Government Ex. 73, at Table 4-10; *see also* Government Ex. 77, at Table 5-4.

recorded values of PCBs and VOCs found in the soil "suggest that contamination was a result of a multitude of separate sources since no clear areal distribution pattern of contamination was discovered." *See* Government Ex. 73, at p. 4-16; *see also* Government Exs. 78, 79. The high level of metals found in the soil were generally consistent with both off-site samples and background soil levels for the eastern region of the United States. *See, e.g.,* Government Ex. 72, 78, and 79. Nickel was found in PAS's groundwater at concentrations that exceeded applicable clean-up and background levels. *See* Stipulated Fact No. 93; Government Ex. 79, at p. 8 (nickel appears to be the only site-related metal in the groundwater); Government Ex. 72, at pp. 58-60 (nickel was noteworthy because of its widespread appearance at high concentrations).

At least some of the 4,607,380 gallons of hazardous[9] liquid waste Alcan sent to PAS for treatment and disposal was stored in the million gallon lagoon. Alcan's waste constituted approximately twenty-five percent of the total volume of waste sent to PAS. *See* Lagoe Testimony, Tr. at 230. Numerous trial witnesses testified that the million gallon lagoon contained three distinct layers of waste: "a 10-14 in. deep 300,000 [gallon] viscous oily layer on top, a 3-5 ft. deep 500,000 [gallon] aqueous layer which contained an intense blood-red colored liquid with a high solids content, a Total Organic Carbon ("TOC") content of approximately 1.5% and high metal ion concentrations[10] and a bottom layer of semi-solid sludge." Government Ex. 125. Testing indicated that PCBs contaminated the lagoon's top layer. *See* Government Ex. 62-025; 62-033; 62-051; 62-052; and 62-136; 84; and 85, at p. 2.

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[9] The Court previously determined that Alcan's emulsion was hazardous within the meaning of CERCLA. *See Alcan,* 755 F. Supp. at 535.

[10] Tests of the aqueous layer indicated the presence of: .075 ppb PCB; 10 parts per million ("ppm") aluminum; 500 ppb cadmium; 20 ppb chromium; 30 ppb copper; 5 ppm lead; 70 ppm nickel and 25 ppm Zinc. *See* Government Ex. 125, Table II.

Hydrochloride gas, which may facilitate the breakdown of an emulsion, was also disposed of in the lagoon.

After taking control of PAS, the EPA contracted with Sealand Environmental Services to remove oil containing liquids from the million gallon lagoon and a 20,000 gallon pit. Sealand vacuumed off the oily PCB contaminated layer of the million gallon lagoon and sent the waste for incineration. After exploring numerous alternatives, the EPA brought in a Mobile Physical Chemical Treatment unit to treat the aqueous layer of the lagoon. *See* Government Ex. 62-052 (the only alternative left for treating liquid wastes in an environmentally acceptable manners was to pass the full contents through a column). The carbon filtration unit (the "Blue Magoo") used at PAS is a mobile physical chemical treatment system designed and built by Envirex in combination with the EPA. After conducting a "treatability study," where Envirex determined "what kinds of inoculant [the government] should use to settle out suspended solids and dissolved metals," and a "pilot plan study to determine what [the government's] carbon utilization rate [and loading] should be," the government processed waste water from the containment lagoons at PAS multiple times. *See* Freestone Testimony, Tr. at 652-53; *see also* Government Ex. 125. The government also used the Blue Magoo to treat the aqueous layer of the million gallon lagoon, which contained Alcan's emulsion. *Id.* The liquid was treated with a process "consisting of PH adjustment, flocculation, mixed-media filtration and carbon adsorption," Government Ex. 125, such that organics and suspended solids were removed. The organic materials included in the treated layer included oils. *Id.* Although the volume of organic materials in the treated layer led to a "very high carbon utilization rate," the treatment cleaned the water substantially. *Id.* at 656. This treatment was

part of a court ordered remedy at PAS.[11] *See* Government Ex. 63.

After the aqueous layer was treated, the sludge-like layer was removed and sent to a landfill site. Approximately fifty compressed gas cylinders were discovered in the lagoon when the sludge was partially removed. *See, e.g.,* Government Ex. 85, at p. 7. Before the cylinders were disposed of, they were examined, cleaned, and when necessary, emptied. Testing of the sludge layer revealed the presence of .50 ppm cadmium; 31.00 ppm chromium; 136.00 ppm lead; and numerous VOCs. *See* Government Ex. 91, at Table I; Government Ex. 98, at Table 3-3. The clean-up of PAS continued from 1978 through 1981. Underground storage tanks and drums filled with hazardous materials, including PCBs were discovered and removed.

In 1981, the surficial clean-up of PAS began. The clean-up included the demolition and disposal of on-site facilities, removal of approximately 8,000 remaining drums, and the drainage and disposal of approximately 80,000 gallons of liquid chemical waste from on-site bulk storage tanks. *See* Government Ex. 73, at 4-2. In 1982, oily waste continued to permeate PAS's soils and surface water.

In November of 1982, the New York State Department of Environmental Conservation ("DEC") hired URS Company to perform a complete site investigation, characterize the remaining contamination, recommend remedial actions, and

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[11] On August 26, 1977, a federal district court in Auburn, New York ordered, inter alia, that the EPA remove the liquid contents from the containment lagoons and process the material on-site through some sort of filtration system such that the EPA could safely discharge the effluent into Wine Creek. That court also ordered the EPA to remove as much liquid from the million gallon lagoon as necessary to eliminate overflow or leakage from the lagoon. *See* Government Ex. 63 (*United States v. Pollution Abatement Services of Oswego Inc., H. Willard Pierce and Jack Miller,* 77-CV-271), *see also* Government Ex. 85, at p. 4.

design the remedial program for PAS. Pollution reports filed by the EPA indicated that despite significant clean-up efforts, PAS still posed a serious environmental threat and in September 1983, PAS was placed on the National Priorities List. *See* 42 U.S.C. § 9605(a)(8)(b); 40 C.F.R. Part 300, Appendix B.

In 1984, the EPA issued a Record of Decision ("ROD") selecting the remedial action to be implemented at PAS. The ROD provided for: 1) containment of hazardous substances at PAS through construction of a soil bentonite slurry wall; 2) construction of an impermeable cap; 3) installation of a leachate collection system within the slurry wall; and d) installation of a groundwater recovery system and on-site treatment of the recovered leachate and groundwater. *See* Government Ex. 84. By 1986, the DEC completed all of its remedial activities other than the on-site treatment system. The EPA and DEC continued to monitor PAS and in 1990, the EPA issued an administrative order on consent to PAS's potentially responsible parties ("PRPs"), other than Alcan, to perform a supplemental remedial investigation. In September 1993, (after considerable work had been done) the EPA issued a supplemental ROD for PAS to address outside contamination. A group of PRPs conducted a Supplemental Pre-Remedial Design Study at PAS. On August 10, 1998, the Court approved a Consent Decree between the EPA and 80 PRPs, which required the non-*de minimis* PRPs[12] to implement the remedy in the Supplemental ROD and reimburse the EPA for $963,300 in past costs and the first $500,000 of future response costs. The *de minimis* PRPs paid the EPA their volumetric share of past costs, totaling $86,269, and agreed to pay their volumetric share of future work and response costs plus a premium.

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[12] The EPA determined that those PRPs who sent a total waste volume of less than 1% to PAS, provided that the waste was not significantly more toxic than other waste sent to the site, were *de minimis* PRPs.

In September of 1997, the EPA issued a second supplemental ROD for PAS to address PCB contamination in adjacent creeks and wetlands. The ROD recommended no further action to remediate the contamination other than long term monitoring of PCB levels.

C. Fulton Terminals

From 1972-1977, Fulton Terminals, Inc., a subsidiary of PAS, operated a staging and storage area for materials awaiting incineration at PAS ("Fulton"). Fulton consists of approximately 1.6 acres in a light industrial/commercial area of the City of Fulton in Oswego County, New York. The Fulton Site housed five above-ground storage tanks, one partially buried storage tank, and two below-ground storage tanks. *See* Appendix 2. Essentially, Fulton housed waste that PAS could not accept because it was over capacity. The contamination at Fulton was due primarily to leaks in the storage tanks. *See* Rotola Testimony.

The Court previously determined that Alcan's waste emulsion was stored at Fulton and that the emulsion was hazardous within the meaning of CERCLA. *See Alcan,* 1996 WL 637559, at *3, *15. The parties have stipulated that Alcan's waste was stored in Tank One, which was an above-ground tank located in the site's South West corner. *See* Appendix 2. Although sample analyses indicated significant PCB contamination at Fulton, tests of the waste remaining in Tank One found less than .01 μg/g PCB. *See* Rotola Testimony; Government Ex. 98, Table 3-1; *see also* Government Exs. 88-90. Tests of the soil and groundwater near Tank One revealed VOC and metal contamination. VOC contamination included vinyl chloride, TCA, and 1,1 dichloroethene, while heavy metal contamination included cadmium, lead, nickel, and chromium. *See* Rotola Testimony. The metal contamination may have been naturally occurring as the sample results generally fell within typical values for soil reported in eastern regions of the country. *See id.; see also*

Government Exs. 100, 101 (finding that in general, on-site metal findings are "well within typical values for the eastern region."), and 102. The EPA listed both nickel and vinyl chloride as "contaminants of concern" at Fulton. *See* Rotola Testimony.

D. Possible Constituents of Alcan's Emulsion

From 1970-1977, Alcan sent 4,607,380 gallons of used emulsion to PAS. Between August 1972 and January 1973, Alcan shipped approximately 70,000 gallons of emulsion to Fulton. No samples of Alcan's emulsion were taken prior to its disposal.[13] Accordingly, the parties and the Court looked to samples of Alcan's emulsion taken between 1981 and 1989; Alcan's use and purchase of materials in its Oswego facility; the contamination of Alcan's facility; and the results of government samples taken from PAS, Fulton, Butler Tunnel,[14] and Sealand[15]

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[13] Alcan employee David Lagoe offered a "souvenir sample" of emulsion allegedly taken in 1978 as evidence that Alcan's emulsion did not contain PCBs at this time. Lagoe testified that he retained this sample as a souvenir from the start up of the ultra filtration process. Lagoe further testified that he retained the keepsake in his desk until the issue of whether Alcan's emulsion contained PCBs in the early 1970s arose in this litigation. *See* Lagoe Testimony, Tr. at 116-117. Testing of the sample conducted by O'Brien & Gere found less than 1,000 parts per billion of PCBs (the detection limit was 1,000 ppb). *See* Lagoe Testimony, Tr. at 117; Alcan Ex. A 8.

Lagoe testified that the emulsion in the sample did not look any different than that used at the plant today.

Significantly, Lagoe did not have the sample analyzed in 1981 when tests first indicated that PCBs may have contaminated the hot roll system. Further, Lagoe did not have the sample analyzed in 1983 when Alcan began an in-house investigation, including extensive testing of the hot mill system to determine the source and extent of PCB contamination, to be discussed later. Instead, Lagoe sent the sample for analysis in 1985 after he was aware that Alcan would likely be a defendant in a number of CERCLA lawsuits.

Based on this information, the Court finds that the sample lacks credibility and assigns it no evidentiary weight.

[14] In the late 1970s, approximately 2,000,000 gallons of oily waste was disposed of at the Butler Tunnel Site. Alcan's used oil emulsion accounted

to determine the likely constituents of Alcan's emulsion. Samples from Butler Tunnel and Sealand are relevant because Alcan sent waste emulsion to these sites in the late 1970s and early 1980s. Because no major changes occurred in Alcan's hot rolling process between 1970 and 1989, the waste sent to Butler Tunnel and Sealand is representative of that sent to PAS and Fulton.

1. Metals

This Court has previously determined, and the parties now stipulate, that, in addition to oil and water, Alcan's emulsion contained aluminum, cadmium, chromium, copper, lead, and zinc. The metal in the emulsion resulted from fragments or "fines" of the ingot breaking away into the emulsion during the rolling process. Impurities in the aluminum ingot included nickel. There is no scientific reason to expect that nickel would behave differently from the other metals in the ingot. In other words, if the other metals made their way into the emulsion

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for approximately 35,000 gallons of this waste. Because the Court will recount only those details necessary for its analysis, further details regarding Alcan's involvement in the Butler Tunnel site can be found at *Alcan-Butler*, 964 F.2d 252.

[15] Sealand operated from 1978-1980. *See* Nunes Testimony, Tr. at 335. The site became an environmental problem in 1980 when waste contaminated an adjacent wetland area. The DEC determined that improper mixing of waste and soil in the land spread area led to hazardous run-off. Alcan sent approximately two million gallons of waste oil emulsion for disposal via land spread at Sealand. This represents approximately seventy-two percent of the total waste that was land spread at the site. Waste sent for land spreading was either placed directly into the land spreader or into a storage tank to await disposal. *See* Nunes Testimony, Tr. at 344. Tests of Sealand's land spread area and storage tank indicated the presence of PCBs. Insignificant levels of VOCs were found in the soil and no detectable levels of VOCs were identified in the storage tank. *See* Government Ex. 115, at 4-3; Nunes Testimony, Tr. at 352.

Alcan's waste was also disposed of in Sealand's disposal cell area where tests revealed relatively high concentrations of VOCS, including TCA, DCA, and vinyl chloride. *See* Government Ex. 115, Table 3-2.

during the rolling process, there is no reason to expect that nickel would not have done the same thing. *See* Meyer Testimony, Tr. at 758; Driscoll. Alcan had the opportunity to test its emulsion for nickel, yet offered no evidence other than the absence of testing by the government to contradict testimony suggesting that the emulsion contained nickel. The Court is not aware of any sampling results that indicate nickel was not in the emulsion. On the basis of Dr. Meyer's testimony and the opinion of the Court appointed expert, the Court finds that it is more likely than not that Alcan's waste emulsion contained nickel. *See id.*

2. PCBs

The government argued that the Court should find that PCBs contaminated Alcan's emulsion in the 1970s, when Fulton and PAS were in operation, based on the totality of the circumstances. This argument works backwards from Alcan's discovery of PCB contamination in its Oswego Plant in 1981 and is supported by the temporal circumstances surrounding the use and availability of PCBs and the extent of the contamination at Alcan's plant. Alcan, on the other hand, argued that the emulsion sent to PAS and Fulton did not contain PCBs. Alcan's argument is supported by the testing for PCBs conducted at PAS, Fulton, and Butler Tunnel and the absence of sampling data prior to 1981.

The evidence shows that Alcan purchased hydraulic fluids and lubricants containing PCBs in the late 1960s and 1970 from Monsanto and E.F. Houghton & Co. Alcan used these fluids in the casting pits in the remelt area and in transformers in various area of the Oswego plant, including the recycling center, remelt area, the homogenizing furnaces, and the cold mill. Monsanto, the sole domestic manufacturer of PCBs, ceased production of PCB containing fluids in 1972 and, thus, PCB fluids were not commercially available in the United States after this date. *See* Kraft Testimony, Tr. at 317.

In October of 1976, Congress passed the Toxic Substances Control Act ("TSCA"), 15 U.S.C. §§ 2601 *et seq.* and the EPA promulgated implementing regulations, which applied to all types of hydraulic equipment. The regulations allowed continued use and topping off of systems containing less than 50 ppm PCBs through 1984; required the draining of systems containing more than 50 ppm PCBs; and prohibited the introduction of any PCB fluids in new hydraulic systems after 1979. *See* Kraft Testimony, Tr. at 315-16. Because PCB containing hydraulic fluids were not commercially available domestically after 1972 and the TSCA and its implementing regulations strictly limited the percentage of PCBs in hydraulic equipment, the evidence suggests that PCB concentration in hydraulic equipment was lower in the 1980s than in the 1970s. *See* Kraft Testimony. In fact, in the early 1980s, the EPA conducted testing of industrial hydraulic equipment to ensure compliance with the TSCA and the highest concentrations discovered measured around 3,000 ppm. *See id.*

The evidence further suggests that Alcan complied with the TSCA and that an internal policy prohibiting the purchase of PCB materials or things known to contain PCBs curtailed Alcan's use of PCBs. *See* Lagoe Testimony, Tr. at 183. Thus, the Court finds that the concentration of PCBs in Alcan's hydraulic equipment mimicked that of industry in general insofar as the percentage of PCBs in the equipment was lower in the 1980s than the 1970s. *See* Kraft Testimony, Tr. at 324. The results of internal testing of Alcan's hydraulic equipment, which found minimal levels of contamination in two units in 1983 (2-3 ppm) and no contamination in 1987, support this conclusion. *See* Government Ex. 21.

In June of 1980, the DEC detected PCBs in Alcan's processed water discharge outfall 002. *See* Government Exs. 3, 6, Lagoe Testimony, Tr. at 188. Alcan subsequently investigated the source of the PCB contamination under DEC's supervision and discovered contamination in the ponds and

wetlands the water passed through en route to outfall 002. Alcan traced this contamination to the use of PCB hydraulic oils in the remelt operation in the late 1960s and 1970. *See* Lagoe Testimony, Tr. at 244.

Despite the unavailability of PCB fluids and strict guidelines on PCB use, in-house testing of Alcan's waste emulsion conducted in 1981 showed PCB contamination.[16] In 1983, testing revealed PCB contamination (1 ppm to 45 ppm range) throughout Alcan's entire waste oil system. *See* Government Ex. 20.[17] The waste oil contamination resulted from contamination in the concrete below the hot roll mill — PCBs residing in the concrete leached into the emulsion.[18] *See, e.g.*, Lagoe Testimony, Tr. at 390-91.

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[16] In 1981, tests found from 9.7 to 14.6 ppm of PCBs in the Reclaimed oil and 8.2 ppm of PCBs in the ultra filtration concentrate. *See* Government Exs. 8, 13.

[17] Tests of the hot mill sludge found PCB contamination: October 1986—29 ppm; October 1987—350 ppm. *See* Government Ex. 20; *see also* Government Ex. 16.

[18] In 1987, Alcan did an in-house study of the extent of contamination, analyzing approximately 100 samples of sludge and concrete throughout the hot line. The results of this analysis indicated that PCBs had contaminated the concrete floors and walls beneath the hot line. The roll table floor contained the following levels of PCBs: between the beginning of the hot line and the Edger ("Section A") there was an average PCB concentration of 23,425 ppm (range < 15.0-51,000 ppm); the area between the edger and the 120 inch mill ("Section B") had an average PCB concentration of 960 ppm (range 410-2,000 ppm); the area between the 120 inch mill and the 8 inch shear ("Section C") had an average PCB concentration of 12,589 ppm (range 155-28,000 ppm); the area between the 8 inch shear and the one and one half inch shear ("Section D") had an average PCB concentration of 24,944 ppm (Range 1,200-64,000 ppm); and the area between the one and one half inch shear and the 100 inch mill ("Section E") had an average PCB concentration of 318 ppm (range < 15.0-630 ppm). The side walls contained the following concentrations of PCBs: Section A had an average of 9,375 ppm (range 7,000-13,000 ppm); Section B had an average of 603 ppm (range 210-910 ppm); Section C had an average of 3,650 ppm (range 3,200-4,100 ppm); and Section D had an average of 14,000 ppm (range 2,000-29,000 ppm). *See*

Between 1981 and 1987, Alcan conducted extensive in-house testing to determine the source and extent of PCB contamination and in 1988, Alcan solicited bids for a PCB remediation project. Testing of the contaminated area revealed extensive contamination in the concrete walls and floor of the hot line. O'Brien and Gere ("OBG") conducted tests of the concrete up to a depth of 3 inches. The parties stipulate that the tests found consistent PCB contamination at depths up to three inches in Sections C and D[19] of the roll table. *See* Government Ex. 23. Moreover, the concrete samples from Section D contained between 1,200 and 64,000 ppm PCBs and the average concentration of PCB contamination in the roll trench floor was 14,944 ppm PCBs. *See id.* Samples of the walls of the roll trench table found an average of 10,142 ppm PCBs. *See id.* Further PCB contamination was found on the roof of the hot line and on a crane located 30 to 45 feet above the hot line. The parties stipulated that PCB contamination extended to the height of the ceiling and crane because "fugitive dusts, mists, and liquids containing PCBs migrated from the Hot Line to these areas above the Hot Line." Stipulated Fact No. 37. This data reveals extensive and widespread contamination in the hot roll mill that can only be explained by extensive use and/or spillage of PCB containing materials. According to an expert witness, approximately 100 to 200 gallons of PCB contaminated fluid would need to have been spilled to account for the contamination in the hot line's floor alone. *See* Connolly Testimony, Tr. at 474; Lagoe Testimony, Tr. at 185.

In this litigation, Alcan maintained that the in-house investigation did not conclusively determine the source of the

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Government Ex. 23. Note that walls or barriers separated the sumps underneath different portions of the hot roll mill such that Section A is separated from Section D and Section D is separated from Section E. *See* Connolly Testimony, Tr. at 476; *see also* Appendix 3, which contains a diagram of hot mill's sections.

[19] For a diagram of the roll table, *see* Appendix 3.

concrete's contamination. Alcan theorized that the contamination may have resulted from a spill from hydraulic equipment in 1983 near Section E of the hot mill as depicted in Appendix 3. However, Alcan did not report any spills of PCBs to New York State or the EPA in the 1980s or warn workers that there may have been a PCB spill during this time period. *See* Lagoe Testimony, Tr. at 184. Moreover, tests indicate that Alcan's emulsion was contaminated in 1981, two years before the possible spill, *see* Government Exs. 8, 13, and that the relative concentration of PCB contamination in Section E was lower than Section A.[20] *See* Connolly Testimony, Tr. at 477. Furthermore, in 1988, Alcan did not explain this theory of contamination to potential bidders on the remediation project. Instead, Alcan told the bidders that "the probable source of contamination was its historical use of a PCB fluid on the roll table system."[21] *See* Government Ex. 23; Government Ex. 25.

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[20] For details of these calculations see Connolly Testimony, Tr. at 477-82.

[21] In a summary of information provided to bidders, OBG employee Pelis wrote:

> By way of general background, Alcan has had a recurring problem with PCB showing up in their waste oils and various other material in the Hot Line area for several years. Last fall they finally discovered where the probable source was within the plant. It was suspected that the concrete walls and floor underlaying the roll table were impregnated with PCB contaminated oils as a result of the weekly cleaning of the mill rollers with a "heat resistant" oil back in the 1960's and 1970's. The plant conducted an in-house study of the extent of the contamination through an analysis of over 100 samples of sludge and concrete throughout the Hot Line.
>
> The results of the analysis confirmed Alcan's suspicions. The highest concentrations were found between the mills where there is not a constant flushing action of coolant during production. In these areas the floor is cleaned only once per year during the annual two week shut down. Government Ex. 23. Pelis obtained this information from Alcan employees. *See* Pelis Testimony, Tr. at 404.

The Court relied on this information despite Pelis's statement at trial that he

Employees or representatives of Alcan repeated this theory to bidders. *See* Government Ex. 25. Moreover, Lagoe testified that, during the relevant time period, the roll table was cleaned with emory paper and lubricated with oil once a week. *See* Lagoe Testimony, Tr. at 153. Significantly, Lagoe, the only Alcan witness to testify at trial, did not have personal knowledge as to what kind of oil was used to lubricate the roll table; Lagoe was not in charge of environmental compliance in the 1970s, did not supervise the cleaning of the roll table, and did not have an office in the direct vicinity of the table. *See* Lagoe Testimony.

In combination with the extensive contamination of the concrete in the hot roll mill, the facts that: (1) Monsanto stopped producing PCB hydraulic oils in 1972; (2) the EPA implemented the TSCA regulations severely limiting and eventually prohibiting the use of PCBs in 1976; (3) testing identified significant levels of PCBs in Alcan's waste oil and ultra filtration concentrate in 1981; (4) only two pieces of Alcan's hydraulic equipment had minimal PCB contamination in 1983; (5) Alcan did not report any PCB spills to government agencies or its employees in the 1980s; (6) the relative concentration of PCB contamination in Section E was lower than Section A; and (7) Alcan explained the probable source of contamination to bidders on the remediation project as historical use of PCB oils on the rolling table, the Court finds it more likely than not that Alcan's theory that the concrete became contaminated because of a possible contractor spill by the 100 inch roll mill in 1983 is not credible and that the

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would make this sort of information up to make OBG look better to Alcan. *See id.* at 410. Given Pelis's previous testimony that the information regarding historical use of PCBs on the roll table must have come from Alcan employees, *see id.* at 404-06, the Court finds Pelis's attempt to discredit his official writing unpersuasive. OBG also identified historical use of PCB oils on the hot mill line in their final bid proposal. *See* Government Ex. 24. Significantly, Alcan accepted this bid.

historical use of PCBs on the hot roll line caused the PCB contamination.

Although there is evidence of significant contamination at Alcan's facility, testing at Fulton, PAS, and Butler Tunnel did not identify significant contamination of PCBs in the areas where Alcan's waste was deposited. This testing, however, does not necessitate a conclusion that Alcan's waste did not contain PCBs.[22] A number of factors including, but not limited to, the variability of waste at the sites, conditions of the sites, material tested, and the number of samples taken impact the test results' value. For example, only one of many samples taken at Butler Tunnel detected PCBs (.052 parts per billion), *see* Towle Testimony, Tr. at 556; Government Ex. 109. However, neither the actual waste disposed of at Butler Tunnel nor the oily discharge compelling clean-up action were tested for PCBs.

> There [were] probably a number of reasons why there [were] so few positive detections for PCB. Among them and most important would be that most of the samples are being collected at a time when there are not currently wastes being discharged from the Butler Tunnel.
>
> Second, there is a large amount of dilution that's occurring, so whatever residual wastes that are left behind are being diluted with a lot of uncontaminated mine water also coming out of the Butler mine tunnel. And additionally, the PCB detection was of a water sample rather than an oil or waste sample, and PCBs are not readily soluble in water.

Towle Testimony, Tr. at 556-57. In other words, the tests conducted at Butler Tunnel tested water discharge rather than the oily discharge or oily water. The fact that PCBs not readily soluble in water is not disputed. *See, e.g.*, Lagoe Testimony, Tr.

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[22] The concerns regarding testing at the superfund sites are equally applicable to the findings regarding metals and VOCs.

at 219 (slightly soluble); Towle Testimony, Tr. at 556-57. Accordingly, if PCBs were present in the oily discharge or waste, one would expect the majority to travel with the oily waste rather than remain in the water.

Because of limits on testing and the testing conditions at PAS, it is equally problematic to conclude that the absence of detection of PCBs at certain locations, specifically the middle aqueous layer and bottom sludge-like layer of the million gallon lagoon, indicates the complete absence of PCBs. Early testing of the Lagoon did not include tests for PCBs because a standard procedure was not available to test for PCBs in a "mixed-organic/oil like matrix." *See* Government Ex. 119. Later testing, however, indicated that PCBs contaminated the top oily layer of waste. *See, e.g.,* Government Ex. 62. The fact that significant levels of PCBs were found in the top oily layer of the million gallon lagoon conclusively establishes that PCBs were present in the lagoon, despite the fact that they were not evenly distributed throughout the waste layers. Accordingly, it would be illogical to infer from tests of the middle and bottom layer of the lagoon, which did not find PCBs, that none of the waste deposited in the lagoon contained PCBs. Furthermore, based on the considerable variability of the waste, discussed below, and testimony regarding the condition of PAS in general, it is evident that no single generator's waste remained in isolated or even recognizable form after disposal. Thus, the fact that Alcan initially disposed of liquid in an emulsion form does not mean that Alcan's waste constituted only the middle layer of the lagoon. In fact, as discussed in Section II(E), it is highly unlikely that Alcan's waste retained its emulsion form after disposal and, thus, it is more likely than not that some of Alcan's waste resided in the PCB contaminated oily layer of the lagoon.

The considerable variability in the lagoon's layers casts further doubt on the conclusiveness of PCB testing. Numerous witnesses testified that the contents of the million gallon lagoon

had substantial variability both within and without the three identifiable layers of waste. *See* Freestone Testimony, Tr. at 651 ("[T]he sludge had variability, depending upon where you sampled."); Yezzi Testimony, Tr. at 684-85; and MacDonald Testimony, Tr. at 584. The high variability of wastes suggests that different findings may have resulted at different sample locations.

At Fulton, Alcan's waste was disposed of in Tank One. At the time of the clean-up and testing, however, all that remained in Tank One was a sludge like material, which Potentially Responsible Parties ("PRPs") eventually removed with shovels. While no PCBs were found in the sludge-like material remaining in the bottom of the tank, Alcan's emulsion was not present either. Neither Alcan nor the government suggests that in the face of evidence that Alcan disposed of emulsion and a stipulation that this emulsion was stored in Tank One, the Court should conclude that the absence of the emulsion at the time of testing suggests that the emulsion was never there. Accordingly, the Court will not conclude based on the absence of PCBs in Tank One's sludge that the tank never contained PCBs.

Seventeen of forty soil samples taken from the land spread area at Sealand tested positive for the presence of PCBs,[23] as did

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[23] All but one of the samples had a J qualifier. Generally, a J qualifier indicates that the concentration given is estimated. *See* Nunes Testimony, Tr. at 339; Government Ex. 135. Nunes testified that in this case, J qualifiers were assigned to data when PCBs were detected between the specified detection limit and the contract required quantitation limit ("CRQL"). *See* Nunes Testimony, Tr. at 341. The CRQL is the level at which one can reasonably be assured that the compound exists at that detected level. The detection limit, which is lower than the CRQL, is a level where it is possible to reliably identify that a substance is present but cannot reliably identify the concentration at which the substance is present. *See* Nunes Testimony, Tr. at 340. The Court finds J qualified data to be a reliable indication that a substance had been positively identified. *See, e.g., Cooper Indust., Inc. v. Agway, Inc.*, 1996 WL 550128, at *15 (N.D.N.Y. Sept. 23, 1996).

two samples from the storage tank. *See* Government Ex. 115. As discussed above, Alcan's waste emulsion constituted seventy-two percent of the material land spread at Sealand. Contrary to the sampling data at Butler Tunnel and Fulton, this data tends to suggest that Alcan's emulsion contained PCBs.

Based on the significant PCB contamination of Alcan's hot rolling line that resulted from the historical use of PCB fluid on the rolling table and the facts that availability and use of PCB fluid was strictly curtailed by the mid-1970s and PCBs in the concrete leached into Alcan's waste emulsion, the Court finds that the government proved, by a preponderance of the evidence, that PCBs contaminated the emulsion Alcan sent to PAS and Fulton. *See* Meyer Testimony, Tr. at 771.

3. VOCs

The government also contends that, at the time Alcan's emulsion was disposed of at PAS and Fulton, it was contaminated with TCA. Again, there are no samples of Alcan's emulsion from this period, so the parties and the Court looked to circumstantial evidence to determine whether Alcan's emulsion contained TCA. The government argued that, based on Alcan's admitted use and purchase of TCA, the TCA contamination in the hot mill area at Alcan's Oswego plant, the EPA's 1989 tests finding TCA in the emulsion, and the presence of TCA and its biological breakdown products at PAS, Fulton, Sealand and Butler Tunnel, the Court should find that TCA was present in the emulsion disposed of at PAS and Fulton. *See, e.g.,* Meyer Testimony. Alcan responds that because TCA is highly volatile, it would have been impossible for TCA to get from the scalping area or plate mill, where they conceded use, into the emulsion. *See* Lagoe Testimony, Tr. at 63-64. Alcan further argued that the 1989 testing data is unreliable because the pages relating to TCA had "do not use" and the data had hand written changes and/or J qualifiers. *See id.* at 66-68.

Alcan used TCA as a cleaner and degreaser in the scalping area and plate mill at the Oswego Plant. *See* Lagoe Testimony, Tr. at 51 -52. Alcan also used TCA to clean the rolls in the gear box on the plate line. Alcan purchased TCA from Ashland Chemical Company. The use of TCA led to contamination of ground water at the plant. Alcan believes that the contamination resulted from a leaking sump adjacent to a scalper where TCA was used for cleaning purposes. *See* Lagoe Testimony, Tr. at 253. In 1978, Alcan had a TCA limitation on outfall 001, which the DEC implemented after finding TCA in the outfall. Outfall 001 included a waste stream from the hot line. *See* Government Ex. 2; Lagoe Testimony, Tr. at 197.

Over time, TCA biodegrades. The biological breakdown products of TCA are 1,1 dichloroethane ("DCA"), 1,1 dichloroethylene ("DCE"), vinyl chloride, and chloroethane. *See* Government Ex. 128, at p. 363; Meyer Testimony, Tr. at 765-70.

Tests conducted in 1989 identified VOCs, including TCA and two or three of TCA's biological breakdown products DCA, chloroethane, and 1,1 Dichloroethene[24] in Alcan's emulsion. *See* Government Ex. 36; Meyer Testimony, Tr. at 770. The fourth breakdown product, vinyl chloride, boils at a low temperature and, thus, would likely evaporate and escape into the atmosphere. *See* Meyer Testimony, Tr. at 770.

Sampling at Butler Tunnel,[25] Fulton,[26] and PAS indicated the presence of TCA and its biological breakdown products.

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[24] The Court notes that Government Exhibit 36, lists 1,1 dichloroethylene rather than 1,1 dichloroethene as one of TCA's four biological breakdown products. If the list of biological breakdown products in this exhibit are correct then, contrary to Meyer's testimony, the 1989 tests identified two of the four breakdown products in Alcan's emulsion.

[25] TCA, DCE, and DCA were detected in the Butler Tunnel mine water near the area wastes were disposed. TCA was also detected in the air circulating in the mine shaft. *See* Towle Testimony, Tr. at 557-58. Tests of the discharge at Butler Tunnel did not test the actual waste discharge, but

Sampling of the land spread area and storage tank at Sealand, however, did not find detectable concentrations of TCA. *See* Lagoe Testimony, Tr. at 68; Nunes Testimony.

Finally, the EPA's sampling in 1989 indicated the presence of TCA in Alcan's emulsion. Alcan argued that this data is unreliable because data pages contain hand written changes, J qualifiers, and/or state "do not use."[27] *See* Government Ex. 36. Kathleen Donnelly, the EPA employee who prepared the data in question, explained that the EPA's standard operating procedures require all usable data in a report to be consolidated on one page. Thus, the usable data on sheets that read "do not read" was consolidated on a separate page. The data used in the report was "QA/QC'd," which means that all of the EPA's "standard operating procedures for insuring that the samples were analyzed and reviewed in accordance with the highest standards to make sure that the data [reported] is accurate." *Id.* at 288. The J qualifier on data does not indicate that it is suspect, but that a positively identified substance has an estimated concentration. J qualified results are reliable and usable. *See* Government Ex. 135; *see also Cooper,* 1996 WL 550128, at *15.

Assuming all of the facts asserted by the government to be true, such that the 1989 tests reliably identified TCA and its biological breakdown products in Alcan's emulsion; TCA and its breakdown products were detected at all four sites under

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subsequent water discharge. *Id.* at 556. Government Exhibits 105, 106, 109, and 110 set forth analytical data with respect to VOC testing.

[26] Sampling of ground water in a monitoring well near Tank One detected TCA, vinyl chloride, and 1,1 dichloroethene. *See* Government Ex. 98. Tests of the sludge in Tank One also detected 1,1 trichloroethane, DCA, and 1,1 dichloroethene. *See* Government Ex. 91, Table I.

[27] Alcan had "split," or duplicate, samples of those tested by the EPA. *See* Donnelly Testimony, Tr. at 280. Alcan had these samples analyzed by an outside laboratory, *see* Lagoe Testimony, Tr. at 191, but did not release the results of any testing.

review; Alcan used TCA near the hot rolling line during the relevant period; and Alcan's groundwater and outflow 001 (which connects to the hot roll line) were contaminated with TCA during the relevant time periods, the Court cannot conclude that it is more likely than not that the emulsion sent to PAS and Fulton was contaminated with TCA. Unlike the evidence presented regarding PCBs, which proved that concrete at Alcan's plant must have been contaminated by PCBs in the early 1970s and that this contamination leached into the waste emulsion and, thus, provided both a temporal and physical link between the PCB contamination and Alcan's plant and the waste emulsion sent to PAS and Fulton, the evidence did not adequately link the TCA contamination, temporally or physically, with the emulsion sent to PAS and Fulton.

E. Physical Characteristics and Interaction of Alcan's Emulsion

The emulsion Alcan sent to PAS and Fulton consisted of approximately 95% deionized mineral water and 5% Farbest mineral oil. The addition of an unknown emulsifying agent, which reduced the surface tension or interfacial tensions between the molecules of water and oil, created the emulsion.

An "emulsion" is defined as "a suspension of small globules of one liquid in a second liquid with which the first will not mix, as milk fats in milk." WEBSTER'S II NEW RIVERSIDE DICTIONARY (1994). In other words, in emulsion form, oil and water exist in a single phase whereas in a simple mixture oil and water exist in separate phases. *See* Meyer Testimony, Tr. at 799. Thus, emulsions have different physical properties than either water or oil alone or a simple oil and water mixture. *Id.* To some degree, both water and oil dissolve hazardous substances. Some substances are more soluble in water than oil and some substances, like PCBs and VOCs, are more soluble in oil than water. An emulsion has the ability to dissolve larger concentrations of substances than either oil or water alone or a simple oil and water mixture and, thus, an emulsion increases

the migratory potential of hazardous substances more than either water or oil. *See* Meyer Testimony, Tr. at 784; *see also* Government Ex. 129; Freestone Testimony, Tr. at 650 ("The normal solubility of most organic substances in water can be measured in the parts per billion and sometimes low parts per million range. For example, Fran Brezenski's data for the Coast Guard lagoon shows various concentrations of contaminants in the parts per billion range. However, the intermediate layer in the main lagoon had a chemical bouillabaisse and such a high concentration of organic materials, in the 1 1/2 percent category. That's 10,000 to 15,000 parts per million. The only way you're going to get that much organic material to stay in water is with some sort of mechanical or chemical emulsion process.").

Unlike oil, an emulsion does not float on top of water. Instead, when added to water, the emulsion will suspend and form a layer below the surface. However, an emulsion will not remain in its emulsion phase forever; instead, it eventually breaks down into its individual components. *See* Meyer Testimony, Tr. at 799; Driscoll. Exposure to the environment, heat, and acid increase the rate at which an emulsion breaks down. *See* Meyer Testimony, Tr. at 799; Driscoll. Therefore, it is unlikely that all of Alcan's emulsion remained in the emulsion phase after disposal. Accordingly, the Court finds that it is more likely than not that Alcan's waste consisted of oil, water, and the water and oil emulsion.

III. Conclusions of Law

A. Legal Standard

In the first stage of this action, the liability phase, the government had the burden of proving, by a preponderance of the evidence, that Alcan was liable under CERCLA. *See infra* note 2. The Court previously found that the government could introduce evidence at trial to prove that Alcan's emulsion

contained PCBs, VOCs, and nickel.[28] Pursuant to the standard outlined by the Second Circuit, if the government proved by a preponderance of the evidence that Alcan's emulsion contained PCBs, VOCs, or above background levels of metals, Alcan could no longer escape liability altogether. *See Alcan,* 990 F.2d at 722 ("[C]ausation * * * is reintroduced only to permit a defendant to escape payment where its pollutants did not contribute more than background contamination and also cannot concentrate."). As discussed above, after careful consideration of the evidence presented at trial the Court found that the government proved that Alcan's emulsion contained PCBs, which are not naturally occurring substances that have "background levels." Therefore, Alcan does not fit within the special category of defendants who can escape all liability under CERCLA.

Additionally, Alcan is not able to escape all liability because the Court found that Alcan's emulsion contained nickel, which was detected at above background levels at both PAS and Fulton. This finding, combined with the expert testimony of Dr. Meyer and Dr. Driscoll, suggests that the metals in Alcan's emulsion can and, in this case, did concentrate. *See* Meyer Testimony; Driscoll letter. Alcan did not negate this finding or present evidence sufficient to prove that the nickel in its emulsion can not concentrate.

Although Alcan cannot escape liability altogether, it can limit its liability by showing that the harm at PAS and Fulton was divisible — that is, it contributed, at most, to a divisible portion of the harm and that there is a reasonable basis to apportion liability for this harm. *See Alcan,* 990 F.2d at 722. To make this showing, Alcan "may present evidence relevant to establishing divisibility of harm, such as, proof disclosing the relative toxicity, migratory potential, degree of migration, and synergistic capacities of the hazardous substances at the site."

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[28] Alcan continues to object to this decision.

Id. To satisfy its burden of proof, Alcan must look at the potential effects of its emulsion as a whole rather than the individual components of the emulsion. *Id.; see also Alcan,* 1997 WL 727506, at *4 n. 5; *United States v. Alcan Aluminum Corp.,* 892 F. Supp. 648 (1995), *aff'd, United States v. Alcan Aluminum Corp.,* 96 F.3d 1434 (1996), *cert. denied,* 521 U.S. 1103 (1997). Thus, as previously recognized by this Court, Alcan "cannot succeed by arguing * * * that it avoids liability simply because its metals [individually] are below background levels." *Alcan,* 1997 WL 727506, at *4 n. 5 (internal citations omitted).

Alcan attacked this divisibility standard claiming that it is inconsistent with scientific principles, procedural and substantive due process, and Fed. R. Evid. 702. Alcan argued that it can establish divisibility by comparing the relative toxicity of its emulsion's individual components with the relative toxicity of other hazardous substances disposed of at PAS and Fulton. *See* Joint Pretrial Stipulation at 30. This argument is based on the theory that one cannot scientifically evaluate the emulsion as a whole, but rather one must "look at the chemical impact of each of the individually chemically distinct parts." Tr. of Sept. 10, 1999 proceedings at p. 12. On September 13, 1999, the Court denied Alcan's pre-trial motion to strike the legal standard set forth by the Second Circuit and replace it with Alcan's proposed standard; the Court will not rehash the issue here. *See id.* It is sufficient to note, as the Third Circuit did when faced with the same argument, that:

> the government responds to 'releases' that threaten environmental safety. Thus, it is the release alone that must justify the response costs, not the particular waste generated by one given defendant. Here, there is no question but that a release occurred. Second, the fact that a single generator's waste would not in itself justify a response is irrelevant in the multi-generator context, as this would permit a generator to escape liability

> where the amount of harm it engendered to the environment was minimal, though it was significant when added to other generator's waste.

Alcan-Butler, 964 F.2d at 264. Accordingly, in determining whether Alcan proved divisibility, the Court will apply the standard set forth by the Second and Third Circuits, which requires Alcan to analyze its emulsion as a whole rather than focusing on the individual constituents of the emulsion.

B. Divisibility

The burden on Alcan to show divisibility is substantial. *See Alcan-Butler,* 964 F.2d at 269. Courts are well aware that "[t]he practical effect of placing the burden on defendants [to prove divisibility] has been that responsible parties rarely escape joint and several liability. [C]ourts regularly [find] that where wastes of varying (and unknown) degrees of toxicity and migratory potential commingle, it simply is impossible to determine the amount of environmental harm caused by each party." *See O'Neil v. Picillo,* 883 F.2d 176, 178-79 (1st Cir.), *cert. denied,* 493 U.S. 1071 (1998) (citing *United States v. Chem-Dyne,* 572 F. Supp. at 811; *Monsanto,* 858 F.2d at 172-73). Courts recognize that the imposition of joint and several liability frequently results in one defendant paying more than its fair share of clean-up costs. *Id.* In the case at bar, the task of proving divisibility is complicated by the fact that neither the parties nor the Court know exactly what was disposed of at either PAS or Fulton or what was in Alcan's emulsion.

Although Alcan tangentially addressed "synergy" and "mixing" at trial,[29] *see, e.g.,* Lagoe Testimony, Tr. at 120-24, it

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[29] Lagoe testified that the mixing of wastes would not create any new problematic chemicals and that there was no evidence of synergism at the site that caused a problem. *See* Lagoe Testimony, Tr. at 122-24. In his testimony, Lagoe used Webster's Seventh New Collegiate Dictionary's definition of synergism: "the cooperative action of discrete agencies, such that the total effect is greater than the sum of the effects taken independently." *Id.* at 123. Lagoe's examples indicate that he considered

did not provide evidence to negate the fact that its emulsion had a mobilizing effect on other hazardous wastes. As previously discussed, the Court found that Alcan's emulsion increased the migratory potential of hazardous substances at PAS and Fulton. In so finding, the Court rejected Alcan's analogy that the emulsion was synonymous to rain or milk added to cornflakes. Alcan's analogy suggests that, like rain, Alcan's emulsion contributed only volume to the waste at the sites. Alcan did not, however, prove that its emulsion was identical to rain in that it contributed only volume. Nor did Alcan prove that its emulsion was benign. In fact, the evidence suggested that Alcan's emulsion was a more aggressive solvent than either water (rain) or oil (milk) because, in an emulsion phase, oil and water have a greater capacity to absorb contaminants than either water or oil alone. Alcan's emulsion, therefore, absorbed the contaminants at the sites and facilitated their transport throughout. In so doing, Alcan's emulsion contributed to the breadth of contamination at both PAS and Fulton. In other words, even if the hazardous substances in Alcan's emulsion themselves did not contribute to the response costs at the sites (which the PCBs and nickel did), the emulsion as a whole contributed to both the release and response costs. Rain, unlike Alcan's emulsion, would not have absorbed the quantity of organic substances, including VOCs and PCBs, which Alcan's emulsion could have.

The extreme conditions at PAS further complicate Alcan's burden of proving divisibility. At least a portion of Alcan's emulsion was dumped into the million gallon lagoon at PAS,

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chemical rather than physical synergism. Lagoe considered whether Alcan's waste, when mixed with other wastes, would combine to form hazardous substances rather than considering whether the addition of Alcan's waste increased the migration of the waste resulting in an increase in total contamination. In fact, Lagoe testified that he did not view the fact that water dissolved water soluble chemicals as an example of synergy. *See id.* at 123-24.

which witnesses described as, among other things, a chemical bouillabaisse. *See* Freestone Testimony. Waste from the million gallon lagoon leaked through a compromised liner on the bottom, pushed through the sides, and overflowed over the top of the lagoon. The leaking waste flowed throughout the site intermingling with, among other things, waste from leaking drums in the drum storage area. At the time the government commenced a clean-up, the ground was so saturated by liquid waste that, according to one witness, it was like walking on a wet sponge.

As the Second Circuit recognized, however, the fact that Alcan's waste commingled with other wastes at PAS and Fulton does not mean that the harm at the sites is indivisible. *See Alcan,* 990 F.2d at 722. The Second Circuit adopted the Restatement (Second) of Torts' definition of divisibility, which states that harm is divisible where "joint tortfeasors act independently and cause a distinct harm, for which there is a reasonable basis of division according to the contribution of each." Prosser and Keeton explain that where two or more causes combine to produce a single indivisible result, liability cannot be apportioned. *See* Prosser & Keeton on Torts, § 52, p. 347 (5th Ed. 1984). Further, the conduct of multiple tortfeasors need not be simultaneous to cause an indivisible harm, "[o]ne defendant may create a situation upon which the other may act later to cause damage." *Id.,* at 348. For example, "[i]f two defendants, struggling for a single gun, succeed in shooting the plaintiff; there is no reasonable basis for dividing the liability." *Id.,* at 345. Moreover, if two defendants shoot the plaintiff "independently, with separate guns, and the plaintiff dies from the effect of both wounds, there can still be no division." *Id.* Thus, where two independent causes combine to cause an aggregate harm which exceeds the sum of the individual harms such that the harm attributable to each PRP becomes indistinguishable, the harm is not divisible. Such is the case at PAS where Alcan's emulsion provided a mode of transport for

other wastes that may not have been carried by rain or surface run off such that the emulsion contributed significantly to PAS's overall contamination. Thus, although the emulsion alone may have caused a specific harm and the waste deposited by other PRPs may have caused specific harms, the extent of the release at PAS is due to the combination of Alcan's waste with other wastes at the site. Accordingly, Alcan failed to prove that the harm at PAS is divisible.

Similarly, Alcan failed to prove that the harm at Fulton was divisible. At Fulton, the soil contamination was caused in large part by leaking storage tanks. Alcan's emulsion contributed to this leaking and the resulting contamination. Again, Alcan presented evidence that it should not be liable for any costs because its waste emulsion, in isolation, is nontoxic. The Court's findings negate this argument. Alcan did not provide any other evidence which proved that the harm at Fulton was divisible. Moreover, as discussed below, Alcan did not provide a reasonable basis for apportionment of either the response or investigative costs at Fulton and PAS.

C. Reasonable Apportionment

Assuming, *arguendo,* that the costs at PAS and Fulton were divisible, the Court will address Alcan's apportionment arguments. The Second Circuit instructed that Alcan could limit liability even if it contributed to the clean-up costs by providing a reasonable basis for apportioning liability. *See Alcan,* 990 F.2d at 722. Alcan attempted to provide such a basis by arguing that certain remediation techniques employed by the government did not address its emulsion.[30] The Court's

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[30] The Court recognizes that Alcan also presented evidence suggesting that the relative toxicity of its waste, when compared to other wastes at PAS, was negligible. Alcan thus argued that it did not contribute to the toxicity of the site and should not be held liable for clean-up costs. As discussed above, however, the Court is looking to Alcan's emulsion as a whole and considering both the chemical and physical interaction of the emulsion with other wastes at the site. Accordingly, even taking Alcan's proposition that

findings that the emulsion contained PCBs and nickel and facilitated the transport of hazardous substances limit the potential "reasonable basis" of apportionment of harm.

1. Remediation Techniques

Alcan offered testimony that specific remediation techniques employed at PAS and Fulton did not address its waste. Specifically, Alcan argued that it should not be held liable for certain costs at PAS including the construction of a slurry wall, collection of oil with absorbent beams, and treatment of liquid waste with a carbon filtration system because these response actions did not, or could not, effectively address its waste. Further, on the same basis, Alcan argued that it was not responsible for the cost of low temperature thermal desorption soil treatment at Fulton.

Section 113(j)(2) of CERCLA states that courts "shall uphold [the EPA's] decision in selecting the response action unless the objecting party can demonstrate, on the administrative record, that the decision was arbitrary and capricious or otherwise not in accordance with law." 42 U.S.C. § 9613(j)(2). Section 107(a) further provides: "Notwithstanding any other provision or rule of law, and subject only to the defenses set forth in subsection (b) of this section," a potentially responsible party "shall be liable for * * * all costs of removal or remedial action incurred by the United States government * * * not inconsistent with the National Contingency Plan ["NCP"]." 42 U.S.C. § 9607(a). "Agency action will be set aside only if: 'the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the

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its waste contained only oil, water, and background metals as true, the Court cannot conclude that the emulsion did not contribute to the release and clean-up costs at PAS.

product of agency expertise.'" *United States v. Burlington N. R.R. Co.*, 200 F.3d 679, 689 (10th Cir. 1999) (quoting *Motor Vehicle Mfrs. Ass'n of U.S. v. State Farm Mut. Ins. Co.*, 463 U.S. 29, 43 (1983)). Together, courts have read these provisions to mean that PRPs, like Alcan, challenging response actions must show "that the costs incurred were inconsistent with the NCP, an issue that is judicially reviewed under the arbitrary and capricious standard of review for agency action." *State of Minnesota v. Kalman W. Abrams Metals, Inc.*, 155 F.3d 1019, 1023 (8th Cir. 1998); *see also Burlington*, 200 F.3d at 692 (citing *United States v. Hardage*, 982 F.2d at 1442); *United States v. Chromalloy Am. Corp.*, 158 F.3d 345, 352 (5th Cir. 1998), *reh'g denied*, 174 F.3d 200 (5th Cir. 1999) ("As long as the government's choice of response is consistent with the NCP, costs are presumed to be recoverable.") (citing *United States v. Northeastern Pharm. & Chem. Co.*, 810 F.2d 726, 748 (8th Cir. 1986), *cert. denied*, 484 U.S. 848 (1987)).

Alcan did not argue that the government's response actions were arbitrary and capricious or inconsistent with the NCP. Rather, Alcan argued that certain remediation techniques did not address its waste emulsion. In a multi-generator CERCLA case, allowing a defendant to divide liability on this basis strays dangerously close to requiring the government to prove that a specific defendant caused a specific clean-up cost, a requirement the Second and Third Circuits have previously rejected. *Alcan*, 990 F.2d 711 at 720; *Alcan-Butler*, 964 F.2d at 264 ("[I]t is the release alone that must justify the response costs, not the particular waste generated by one defendant."). Moreover, allowing a defendant to avoid response costs at the apportionment phase simply by proving by a preponderance of the evidence that a certain remediation technique did not address the problems caused by its waste rather than reviewing the government's choice to employ certain techniques under an arbitrary and capricious standard, as required by the plain language of CERCLA, *see* 42 U.S.C. § 9607(a), 42 U.S.C.

§ 9613(j)(2), may open the "backdoor" to causation further than the Second Circuit intended. Nevertheless, the facts of this case show that the remediation techniques under attack did address environmental problems contributed to by Alcan's emulsion. Accordingly, it is unnecessary for this Court to determine how far the Second Circuit intended causation be reintroduced to this analysis.

(a) Slurry Wall

Alcan first argued that the presence of its emulsion at the site did not influence the size of the slurry wall. *See* Lagoe Testimony, Tr. at 106-08. To build a slurry wall, a trench is dug until a naturally impermeable layer is reached. The trench is then filled with clay to make an impermeable wall. The slurry wall creates an impermeable barrier on the perimeter of a contaminated site, diverts groundwater away from the site, and isolates groundwater contaminants on-site. *See* Government Ex. 70. Alcan argued that because PAS's geography defined the depth of the slurry wall and PAS's operations determined the slurry wall's other dimensions, the slurry wall would have been constructed in the same way even if Alcan had not sent waste to the site.

In a multi-generator context, a PRP cannot avoid liability by showing that the government would have taken action absent a single generator's waste. As noted by the Third Circuit in *Alcan-Butler:*

> [T]he fact that a single generator's waste would not in itself justify a response cost is irrelevant in the multi-generator context, as this would permit a generator to escape liability where the amount of harm it engendered to the environment was minimal, though it was significant when added to other generator's waste.

964 F.2d at 264. Therefore, to avoid liability Alcan must show that its emulsion, when mixed with other hazardous wastes, did not contribute to the response costs — in this case, the need for

the slurry wall. It is insufficient to show that the slurry wall would have been necessary but for Alcan's waste. *See Alcan,* 990 F.2d at 722.

Given the prior findings of this Court that Alcan's emulsion contained PCBs, contributed to above background levels of nickel in PAS's groundwater, had the capacity to absorb and transport hazardous substances and, thus, contributed to the migration of hazardous materials at PAS, the Court concludes that the government erected the slurry wall, in part, to address problems contributed to by the emulsion. Accordingly, Alcan is jointly and severally liable for the cost of the slurry wall.

(b) Absorbent Beam

Alcan next argued that because it disposed of oil emulsion, which does not float on top of the water, the use of an oil absorbent beam did not address its waste. As discussed, however, it is highly unlikely that all of Alcan's emulsion remained in the emulsion phase after disposal. It is more likely than not that when exposed to the environment some of the emulsion broke down into water and oil. Alcan did not prove that the emulsion did not contribute to the intense saturation of PAS with oily waste. Thus, the oil absorbent beam remediated a portion of Alcan's waste. It is unreasonable to apportion the cost of the beam by comparing how much of Alcan's oil the beam absorbed compared to how much oil from other sources it collected. Neither the Court nor the parties know how much of Alcan's emulsion was incinerated, how much remained in the emulsion phase, and how much separated into oil and water. Moreover, as discussed above, the Court cannot interpret CERCLA to allow divisibility of harm based on a theory that although a certain remediation technique addressed a PRPs waste, the technique would have been required absent that waste. Accordingly, Alcan is jointly and severally liable for the cost of the absorbent beam.

(c) Carbon Filtration System

Alcan next argued that the use of a carbon filtration system at PAS would not effectively remediate its waste because the oil in the emulsion would coat the carbon granules and prevent absorption.

The evidence demonstrated that the government successfully treated waste, including Alcan's, with a carbon filtration system. The evidence further suggested that the high organic content of the aqueous layer of the lagoon was attributable, in part, to the presence of Alcan's emulsion, which absorbed more organics than water alone could. Moreover, the carbon filtration system was employed as part of a court ordered remedy.

The fact that carbon filtration may not have been the most effective way to treat the emulsion, due to its oil content, does not mean that Alcan is not liable for the cost of treatment. As discussed above, Alcan can only escape liability for the cost of a specific remediation technique that addressed its waste by demonstrating that the technique is inconsistent with the NCP, a decision which is reviewed under the arbitrary and capricious standard. *See, e.g., Kalman W. Abrams Metals,* 155 F.3d at 1023. Alcan's arguments regarding the effectiveness of the method did not indicate the government's actions were inconsistent with the NCP or that the choice of remediation technique was arbitrary and capricious. Because Alcan has not sustained its burden of proof and demonstrated that the cost of carbon filtration was reasonably apportionable, it is jointly and severally liable for the costs associated with the water treatment.

(d) Low Temperature Thermal Desorption

Alcan further argued that because low temperature thermal desorption is not an effective remedy for metals, this remedy did not address its emulsion at Fulton. *See* Lagoe Testimony, Tr. at p. 113. Low temperature thermal desorption involves

digging up soil and heating it to volatilize organic materials. Leaking storage tanks primarily caused the soil and water contamination at Fulton. The parties stipulated that Alcan's emulsion was stored in Fulton's Tank One. The groundwater samples near Tank One showed the highest contamination levels, which suggests that material, including Alcan's emulsion, leaked from Tank One and contributed to the surrounding contamination. Although Alcan's emulsion itself may not have contributed VOCs to the soil around Tank One (groundwater analysis indicated the presence of, among other things, vinyl chloride, TCA, and 1,1, dichloroethene), Alcan did not prove that its emulsion did not mobilize hazardous wastes disposed of in Tank One and, thus, contribute to the soil contamination. Therefore, Alcan is jointly and severally liable for the cost of low temperature thermal desorption.

D. Investigative Costs

The government argued that even if Alcan proved that the harm at Fulton and PAS were divisible, the costs incurred in investigating the environmental situation at PAS and Fulton are indivisible and, thus, incapable of reasonable apportionment. Section 104(b)(1) of CERCLA requires the EPA to conduct studies and investigations as:

> necessary and appropriate to identify the existence and extent of the release or threat thereof, the source and nature of the hazardous substances, pollutants or contaminants involved, and the extent of danger to the public health or welfare or to the environment.

42 U.S.C. § 9604(b)(1). The NCP requires the EPA to characterize the nature and content of contamination at a specific site to determine the nature of, and threat posed, by any hazardous materials. *See* 40 C.F.R. § 300.430(d)(2). In cases where the EPA's information regarding the waste disposed of at a specific site is limited, the government argued that the EPA is obligated to sample for all the contaminants listed on the EPA's

Target Compound List ("TCL"). The government concluded that:

> [I]n cases where sites are contaminated with commingled waste, it is logically infeasible to use a sampling plan whereby sampling is divided into operable geographic units or into studies of a PRP's potential contributions to the contamination. Instead, [a Remedial Investigation Feasibility Study ("RIFS")] investigates the presence of contaminants on the [TCL] by a random sampling plan. By its very nature, a random sampling plan does not lend itself to apportionment between individual defendants.

Governments Trial Brief at 21 n. 11. The testimony of Nicoletta Diforte, who acted as a remedial project manager at Fulton and PAS, supports this conclusion. *See* DiForte Testimony (stating that work done in the RIFS stage is general, focusing on the specific features of the site rather than a specific generator's waste).

Alcan does not dispute this argument; but, rather, it argued that it "will demonstrate that this position is inconsistent with the law" as stated in *Licciardi v. Murphy Oil,* 111 F.3d 396 (5th Cir. 1997). *Licciardi,* however, does not refute the government's argument that the EPA's RIFS costs are not divisible. In *Licciardi,* a private homeowner brought a CERCLA cost recovery action against a neighboring oil refinery seeking to recover expenses for sampling and testing. The Fifth Circuit found that the Plaintiff's testing did not establish that any regulatory standards had been breached and held that in the absence of any such breaches or any other evidence, "a finding of hazardous substances 'above background levels'" is insufficient grounds on which to base CERCLA liability.[31] *Id.*

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[31] In a number of cases including this one, the Second Circuit has ruled that CERCLA liability can be premised on a finding of hazardous substances even when the substances are found below background levels, further reaffirming the principle that "quantity or concentration is not a factor" in

at 399. The Fifth Circuit's holding was based on the finding that the fourth element of a CERCLA cost recovery action, that "the release or threatened release of hazardous material must have caused plaintiff to incur response costs," had not been proven. *Id.* at 398-99. The decision did not address divisibility of harm or apportionment of costs. Here, however, the Court has previously determined Alcan is liable under CERCLA and, thus, has determined that, pursuant to CERCLA section 107(a), Alcan is jointly and severally liable for "all costs of removal or remedial action" at PAS and Fulton absent proof of divisibility and a reasonable basis of apportionment. *See Alcan,* 990 F.2d at 722; *Alcan,* 1996 WL 637559; *Alcan,* 755 F. Supp. 531. Accordingly, this case is outside of *Licciardi's* ambit.

It is well-settled that investigation and sampling costs are recoverable under CERCLA section 107(a), *see, e.g., B.F. Goodrich,* 99 F.3d at 528; *Lansford-Coaldale Joint Water Auth. v. Tonolli Corp.,* 4 F.3d 1209, 1218 (3d Cir. 1993) ("It is well-established that under this provision a plaintiff can recover its monitoring and evaluation costs from a release or threatened release without proving that its property was actually contaminated by the defendant."), and, thus, the question before the Court is limited to whether RIFS costs are ever divisible. The Court does not have to answer this question, however, because Alcan failed to satisfy its burden of proof. Alcan did not present any evidence regarding divisibility of the RIFS costs or any "reasonable basis" on which the Court could apportion such costs. Therefore, Alcan is jointly and severally liable for the RIFS costs at Fulton and PAS.

E. Remaining Arguments

Alcan did not present any other evidence proving a reasonable basis of apportionment of costs at either PAS and

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interpreting CERCLA's definition of hazardous substances. *Alcan,* 990 F.2d at 720 (citing CERCLA § 9601(14); *Murtha,* 958 F.2d at 1200; *accord Alcan-Butler,* 964 F.2d at 259-61.)

Fulton. The arguments not discussed by the Court addressed the individual constituents of Alcan's emulsion and/or Alcan's emulsion in isolation rather than the effect of the emulsion as a whole when mixed with other hazardous wastes at the site. As discussed above, these arguments are inconsistent with both the legal standard set forth by the Second Circuit and the policies behind CERCLA. As demonstrated by the evidence before the court a singularly non-toxic substance can physically interact with other substances and contribute to release and response costs. Arguments that ignore this combined effect, therefore, do not provide a reasonable basis for apportionment. Moreover, given the finding that the emulsion contained PCBs and nickel, Alcan's argument that its emulsion alone was harmless cannot succeed.

Accordingly, the Court finds that Alcan failed to prove that the harm at Fulton and PAS was divisible, that it was liable for only a divisible portion of the harm, or that there was a reasonable basis for apportionment of harm and, thus, Alcan is jointly and severally liable for all costs recoverable under CERCLA.

IV. Conclusion

The Court finds that the government satisfied its burden of proving that Alcan's emulsion contained PCBs and nickel. The Court further finds that Alcan did not satisfy its burden of proof on divisibility or provide this Court with a reasonable basis of apportionment of costs. Accordingly, Alcan is jointly and severally liable for response costs at Fulton and PAS. The government is **ORDERED** to submit an accounting of costs and settlements incurred at each site to date within 14 days of the date of this order such that the Court can quantify the damages award.

IT IS SO ORDERED.